DEI A&E Engineering Support Service for
Terminal Program Operations Facilities Office
Contract DTFAWA-07-D-00040

# Seismic Upgrade
# Pasco Tri-Cities Airport
# ATCT and Base Building

## Final Specification

Task Order 0009

## PSC ATCT and Base Building
## Pasco, Washington

May 17, 2010

JACOBS

# SECTION 01 10 00 - SUMMARY

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section Consists of Special Provisions Required for this Project.

B. Design and installation shall be in accordance with practice of IBC 2006.

The Yakima Airport Traffic Control Tower (ATCT) and the Pasco ATCT both operates 6:00 am to 10:00 pm, 7 days per week. It will be necessary to coordinate construction activity so as not to interfere with functions of the FAA or the Yakima/Pasco Airport. Loss of FAA equipment for any amount of time will jeopardize safety of the flying public and may result in criminal charges against the Contractor.

### 1.2 JOB CONDITIONS

A. Written notification of any planned shut-down of existing facilities and/or utilities which may affect airport or FAA operations, shall be provided to COTR 5 working days (7 calendar days) in advance of such a shut-down.

B. Existing equipment indicated to remain shall be operational at all times during the renovation.

### 1.3 PLAN OF ACTION

A. Do not perform any work which will require shutting down any services without an approved Plan of Action.

B. Submit Plan of Action consisting of a written report describing the construction necessary, the utilities, piping or other services that will be affected, the length of time that each service or utility will be disturbed, and the procedures to be employed by the Contractor to carry out the work in a timely manner. Include action to be taken in case of emergencies, and an alternate plan that can be employed in the event that the original schedule cannot otherwise be met. The Contracting Officer's Technical Representative (COTR) must approve the plan prior to any work being performed.

C. Shutdowns shall be coordinated with the operations of Yakima/Pasco, WA, Airport Traffic Control Tower and approved by the COTR in all circumstances, and shall be scheduled in a manner to create the minimum amount of interference with existing FAA or airport facility operations. When shutdowns are necessary and have been approved by the COTR, employ additional labor and work overtime as necessary to restore the facilities to operation at the earliest possible time at no additional cost to the FAA. Work shall proceed continuously until all service is restored.

1.4 WORKING HOURS

A. Normal work hours shall be either 5/8 or 4/10 schedule, coordinate at the precon between all parties concern. All welding and work that will make unacceptable noise (greater than 100db) will be performed after hours. The contractor shall notify the COTR in writing 48 hours in advance of any planned revision or overtime.

B. Mids Work: Certain work activities will be performed during the hours of 10:00 pm to 6:00 am. These activities include the removal and replacement of electrical panels, inside the elevator shaft, welding and any noise generated work that will affect the controllers in the Cab.

1.5 OCCUPANCY REQUIREMENTS

A. Partial FAA Occupancy: FAA reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. COTR will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before FAA occupancy.

2. Obtain a Certificate of Occupancy from authorities having jurisdiction before FAA occupancy.

3. Before partial FAA occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, FAA will provide, operate, and maintain mechanical and electrical systems serving occupied portions of building.

4. On occupancy, FAA will assume responsibility for maintenance and custodial service for occupied portions of building.

5. COTR will coordinate with Contractor, during development of Construction schedule, to identify areas of the building for Partial Occupancy prior to substantial completion.

1.6 HAZARDOUS MATERIAL CERTIFICATION

A. Asbestos containing materials (ACM) shall not be permitted for use on this Project.

1. Provide letters of certification for the project at completion, certifying that no asbestos was used.

B. Lead-free materials.

1. Provide letters of certification for the project at completion, certifying that only lead-free paints, plumbing materials and flashings were used.

1.7 ACCEPTANCE AND WARRANTIES

A. Upon substantial completion of work the FAA will conduct Contractor Acceptance Inspections (CAI). At the appropriate stage after the CAI, the Work will be considered Substantial Complete, and the FAA will assume occupancy of the Work at a date identified as Beneficial Occupancy Date (BOD). Other Contractor Acceptance Inspections will be conducted prior to partial FAA occupancies. A final inspection, called Joint Acceptance Inspection (JAI), to determine FAA acceptance of the total Work, will then be conducted.

B. The Contractor shall warranty material and equipment furnished by the various manufacturers in writing for a period of two (2) years (or not less than the industry standard for the material specified, nor the manufacturer's standard warranty period, whichever is greater) on building systems, finishes or equipment from the date of final project acceptance by the FAA. Mechanical equipment in particular (HVAC equipment and fire protection equipment,) shall be warranted in writing for a period of three (3) years (or not less than the manufacturer's standard warranty period, whichever is greater), from date of final project acceptance by the FAA. The costs of any extended warranties will be included in the contract sum.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials shall be as specified in the various sections of these specifications.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

# SECTION 01 14 00 - WORK RESTRICTIONS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Perform administrative job related requirements necessary for the proper conduct of the Work as indicated in this section and to comply with the General Conditions.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

A. Materials shall be in accordance with the requirements of the individual sections of these specifications.

### 2.2 MATERIALS CONTAINING ASBESTOS

A. No materials or products which contain asbestos in any form may be used on this project.

### 2.3 LEAD FREE PAINT, PLUMBING AND FLASHING MATERIALS

A. Only lead free paint, plumbing and flashing materials may be used on this project.

### 2.4 BUY AMERICA ACT

A. Provide only equipment and materials of United States manufacture on this project.

## PART 3 - EXECUTION

### 3.1 FIELD MEASUREMENTS

A. Contractor, Installer and sub-contractors are responsible for making complete field measurements. Check all dimensions at the job site for components requiring fit to surrounding conditions. Check shop drawings and indicate the actual dimension available at all locations.

### 3.2 JOB SAFETY PROGRAM REQUIREMENTS

A. All on-site work under this Contract shall be performed in compliance with the requirements of all Federal and State Occupational Safety and Health laws and regulations as they apply to construction site activity.

1. Comply with applicable Occupational Safety and Health Standard (29 CFR 1910 and 1926) promulgated pursuant to authority of the Occupational Safety and Health Act of 1970.
2. Comply with any other applicable Federal, State, or local regulations governing workplace safety to the extent that they do not conflict with other clauses of this contract. If a conflict exists between sections of this Contract, the more stringent requirement takes precedence.
3. Take all other proper precautions to protect the safety and health of the contractor's employees, Federal Aviation Administration employees, and the public. Provide and maintain barricades, guard rails, covered walkways, lighting devices and other protective devices necessary to warn and protect the workmen and general public from hazards at the construction site.

B. A minimum of 7 days prior to the start of construction, the contractor shall submit a preliminary Project Safety Program, and meet/discuss with the Contracting Officer's Technical Representative (COTR) to review the preliminary program and to discuss overall project safety requirements.

C. Prior to the start of construction activity, the contractor shall revise the preliminary Safety Program addressing FAA comments and provide FAA one copy of the final Project Safety Program. This program shall provide an aggressive action system by which hazardous conditions and unsafe practices shall be eliminated during the performance of this Contract. Construction work under this Contract shall not begin until the Project Safety program has been approved by COTR. Approval shall not relieve the contractor of the responsibility for full compliance with all applicable statutory and regulatory requirements.
1. In addition to compliance with applicable statutory and regulatory requirements, the Project Safety Program shall contain provisions for mandatory safety orientation for every subcontractor, and vendor employee assigned or sent to the site. Safety orientation shall cover as a minimum the rules and regulations governing on-site construction activities, special known hazards, accident prevention, emergency procedures, and personal protection equipment requirements. Upon completion of the safety orientation, each attendee will be issued a hard hat sticker. No contractor, subcontractor, or vendor employee will be allowed to enter or remain on-site without a hard hat bearing a valid safety orientation sticker.

D. The contractor will maintain an accurate record of exposure data and all accidents incident to work performed under this Contract resulting in death, traumatic injury, occupational disease, or damage to property, material, supplies, or equipment. The contractor must report the exposure data and accidents as prescribed by the COTR.

E. All subcontracts and vendor purchase orders related to this project shall contain provisions requiring compliance with the contractor's approved Project Safety Program.

## 3.3 FIRE PROTECTION

A. Maintain fire extinguishers at construction site in sufficient number to adequately protect the structures during construction. Provide at least one fire extinguisher at each construction office. Provide at least one fire extinguisher for welders or other trades using open flames in the

execution of their work. Maintain "Fire Watch" personnel, with fire extinguisher in hand, during all welding/cutting or other open flame operations on, within, or near existing facility.

B. Maintain the telephone number of the local fire department. Keep number posted conspicuously near telephone. Posted a summary of telephone numbers at an approved location that list FAA personnel , fire department, hospital, etc. for emergency.

## 3.4 DISRUPTION TO SERVICES

A. The loss of shut down of existing FAA air traffic control equipment or associated support equipment for any amount of time will jeopardize safety of the flying public and may result in criminal charges against the contractor.

B. Disruption to existing utilities, piping, or electrical services must be held to a minimum. Carefully plan work in a manner that such disruptions are coordinated with the COTR. Any operation which requires shut down of some portion of the facilities operation must be in compliance with section 01 10 00, "Summary of Work."

C. Maintain storm sewers and sanitary sewers in service at all times. In the event that it becomes necessary to disrupt one of the utilities, provide temporary service around the construction or otherwise construct the structure in a manner that the flow is not curtailed.

## 3.5 ENVIRONMENTAL PROTECTION AND POLLUTION CONTROL

A. The contractor shall perform all work necessary to implement and accomplish a program to prevent environmental pollution during or as a result of construction performed under this contract.

B. Take necessary precautions to prevent contamination of soil or atmosphere by the discharge of noxious substances resulting from construction operations. Provide equipment and personnel and perform emergency measures necessary to contain any spillage. If contamination of the soil does occur, excavate contaminated soil and dispose of at an off-site location in accordance with applicable Federal, State, and local regulations. Fill resulting excavations with suitable backfill and compact to the density of the surrounding undisturbed soil.

C. Take measures to prevent dispersal of pollutants into the atmosphere. Do not dump or otherwise discharge noxious, volatile or harmful fluids into drains or sewers.

D. Refer to Section 00 31 26 "Existing Hazardous Material Information" for information on existing conditions at facility.

## 3.6 HANDLING OF HAZARDOUS MATERIALS

A. Hazardous material which has been identified and requires removal, encapsulation or other protection shall be performed only by qualified, independent asbestos and/or lead base paint abatement contractor(s) as part of this Contract. Disposal of hazardous material resulting from this work shall be in accordance with applicable Federal, State and local regulations.

## 3.7 WEATHER PROTECTION

A. Structure: Provide and maintain weather protection with tarpaulins or polyethylene film supported on and secured to temporary framework and scaffolding to protect all parts of the structure and contents from damage by the elements.

B. Wall Openings: Install, maintain and subsequently remove, temporary weather closures, at exterior walls, parapets, columns and roof construction, as required. These closures shall be installed at the conclusion of each working period affecting the wall openings and shall be maintained in weather-tight condition until work is resumed and completed. The weather closures shall be subject to approval and direction of the COTR.

## 3.8 SLEEVES AND EQUIPMENT BASE

A. Furnish and install temporary watertight closures for sleeve openings below grade. Such closures shall remain in place until pipe installation in sleeves is completed and made watertight.

B. Coordinate the sizes, locations, and installation of all sleeves and equipment bases in a time and manner to avoid any hindrance to work of other trades. In the event that sleeves, inserts, and any imbedded items are to be placed in concrete, form required openings in the Work. Any subsequent related cutting and patching will be the responsibility of the Design/Builder.

## 3.9 BLASTING

A. No blasting will be permitted at this site.

## 3.10 HAUL ROUTE

A. Haul and Access Route to the site is as identified on the Drawings or during the preconstruction conference. The contractor shall comply with the requirements and regulations of the appropriate local, state, and federal agencies.

## 3.11 ORDER OF PRECEDENCE

Coordinate work in a manner to avoid conflicts or interference between trades. Lay out work in advance of installation to ascertain location of various systems and arrangement of ductwork, piping, conduit and equipment. Coordinate work and take action as necessary to avoid conflicts between the work of the various trades. Establish the exact locations of equipment based on actual dimensions of the items furnished.

## 3.12 INITIAL MAINTENANCE

A. Maintain equipment until the project is turned over to the FAA. Ensure that mechanical equipment is properly greased, oiled, or otherwise cared for as recommended by the

manufacturer. Do not operate air handling equipment unless filters are in place and are clean. Change filters operating air handling equipment weekly during construction/operations.

B. One week prior to the FAA taking possession, service equipment if applicable. Make sure that oiling points are oiled, bearings are greased, and other maintenance is performed. Replace all replaceable filters and clean permanent filters associated with air handling units or other packaged equipment.

END OF SECTION 01 14 00

# SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

### 1.2 CHANGES IN THE WORK

A. Contracting Officer’s Technical Representative (COTR) will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on forms approved by Government and Contractor.

### 1.3 PROPOSAL REQUESTS

A. FAA-Initiated Proposal Requests: COTR or Project engineer will issue a detailed description of proposed changes thru the CO that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by COTR are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within 3 working days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change. Time period for submitting a quotation may be extended if the requested work requires a new subcontract and not just a modification to an existing subcontract.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to the contracting officer thru the COTR.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

C. Proposal Request Form: Use standard FAA Change Order documents or other form as approved by the COTR.

1.4 CHANGE ORDER PROCEDURES

A. On FAA's approval of a Proposal Request, CO will issue a Change Order for signatures of FAA and Contractor on standard FAA form.

1.5 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: COTR may issue a Construction Change Directive approved by the CO. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

# SECTION 01 33 00 - SUBMITTAL PROCEDURES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including:
   1. Submittal schedule.
   2. Shop Drawings.
   3. Product Data.
   4. Samples.
   5. Quality assurance submittals.
   6. Operation and Maintenance Manuals.

B. Administrative Submittals: Refer to other Sections of the Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:
   1. Welder's certificate
   2. Applications for Payment.
   3. Performance and payment bonds.
   4. Insurance certificates.
   5. List of subcontractors.

### 1.2 DEFINITIONS

A. Coordination Drawings show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or to function as intended.

B. Field samples are full-size physical examples erected on-site to illustrate finishes, coatings, or finish materials. Field samples are used to establish the standard by which the Work shall be judged.

C. Mockups are full-size assemblies for review of construction, coordination, testing, or operation; they are not Samples.

D. CO: Contracting Officer

E. COTR: Contracting Officer's Technical Representative.

F. PM: FAA Project Manager

G. Critical Path Method (CPM): A method of planning and scheduling a construction project where activities are arranged based on activity relationships along the critical path of the project.

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

   Coordinate transmittal of different types of submittals for related elements of the Work so processing shall not be delayed by the need to review submittals concurrently for coordination. The PM reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
2. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
   a. Allow 10 work days for initial review. Allow additional time if the PM must delay processing to permit coordination with subsequent submittals.
   b. If an intermediate submittal is necessary, process the same as the initial submittal.
   c. Allow 10 work days for reprocessing each submittal.
   d. No extension of Contract Time shall be authorized because of failure to transmit submittals to the PM sufficiently in advance of the Work to permit processing.

B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on label or title block.
1. Provide a space approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
2. Include the following information (if applicable) on the label for processing and recording action taken:
   a. Submittal number.
   b. Project name.
   c. Date.
   d. Name and address of the Architect/Engineer.
   e. Name and address of the Contractor.
   f. Name and address of the subcontractor.
   g. Name and address of the supplier.
   h. Name of the manufacturer.
   i. Number and title of appropriate Specification Section.
   j. Drawing number and detail references, as appropriate.

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the COTR/PM using a transmittal form. The FAA shall not accept submittals received from sources other than Contractor.

1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor’s certification that information complies with Contract Document requirements.
2. Transmittal Form: Use standard transmittal.

1.4 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's Construction Schedule, prepare complete schedule of submittals. Submit the schedule within 10 calendar days of the date required for submittal of the Contractor's Construction Schedule.
   1. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction Schedule.
   2. Prepare the schedule in chronological order. Provide the following information:
      a. Scheduled date for the first submittal.
      b. Related Section number.
      c. Submittal category (Shop Drawings, Product Data, or Samples).
      d. Name of the subcontractor.
      e. Description of the part of the Work covered.
      f. Scheduled date for resubmittal.
      g. Scheduled date for the PM's final release or approval.

B. The Submittal Schedule shall be reviewed by the COTR, and PM for content and responsibility of reviews. The COTR will indicate which submittal reviews they desire to perform concurrent with the PM's review. The PM shall coordinate and consolidate all reviews and review comments.

C. Distribution: Following response to the initial submittal, the PM shall print and distribute copies to the COTR, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
   1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

D. Schedule Updating: Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 SHOP DRAWINGS

A. Submit newly prepared information drawing accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

B. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
   1. Dimensions.
   2. Identification of products and materials included by sheet and detail number.
   3. Compliance with specified standard.
   4. Notation of coordination requirements.
   5. Notation of dimensions established by field measurement.
   6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 11 by 17 inches.
   7. Initial Submittal: Submit 4 blue or black-line prints for the COTR/PM's review. The PM shall coordinate review with the COTR. The PM shall return 2 prints to the contractor.
   8. Final Submittal: If final submittal is required, submit 4 blue or black-line prints and 2 additional prints where required for maintenance manuals, plus the number of prints needed by the PM for distribution.

a. One of the prints returned shall be marked up and maintained as a "Record Document." or "As-built drawings".

9. Do not use Shop Drawings without an appropriate final stamp indicating action taken.

## 1.6 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
   a. Manufacturer's printed recommendations.
   b. Compliance with trade association standards.
   c. Compliance with recognized testing agency standards.
   d. Application of testing agency labels and seals.
   e. Notation of dimensions verified by field measurement.
   f. Notation of coordination requirements.
2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
3. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.
4. Submittals: Submit 4 copies of each required submittal; submit 5 copies where required for maintenance manuals. The PM shall retain 2 and shall return the others marked with action taken and corrections or modifications required.
   a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
   a. Do not proceed with installation until a copy of Product Data is in the Installer's possession.
   b. Do not permit use of unmarked copies of Product Data in connection with construction.

B. Material Safety Data Sheets: Provide MSDS for products when required.

## 1.7 SAMPLES

## 1.8 QUALITY ASSURANCE SUBMITTALS

A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.

B. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.

1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's written recommendations.
b. Manufacturer's product specifications.
c. Manufacturer's installation instructions.
d. Standard color charts.
e. Manufacturer's catalog cuts.
f. Wiring diagrams showing factory-installed wiring.
g. Printed performance curves.
h. Operational range diagrams.
i. Mill reports.
j. Standard product operation and maintenance manuals.
k. Compliance with specified referenced standards.
l. Testing by recognized testing agency.
m. Application of testing agency labels and seals.
n. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.
5. Number of Copies: Submit copies of Product Data, unless otherwise indicated. COTR will return copies. Mark up and retain one returned copy as a Project Record Document.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Dimensions.
b. Identification of products.
c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
f. Shop work manufacturing instructions.
g. Templates and patterns.
h. Schedules.
i. Design calculations.
j. Compliance with specified standards.
k. Notation of coordination requirements.

l. Notation of dimensions established by field measurement.
m. Relationship to adjoining construction clearly indicated.
n. Seal and signature of professional engineer if specified.
o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 11 by 17 inches.
3. Number of Copies: Submit two copies of each submittal. COTR will return one copy.
4. Number of Copies: Submit 4 copies of each submittal, unless copies are required for operation and maintenance manuals. Submit 5 copies where copies are required for operation and maintenance manuals. COTR will retain 3 copies; remainder will be returned

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of appropriate Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as FAA's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. COTR will return submittal with options selected.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
2. Number and name of room or space.
3. Location within room or space.
4. Number of Copies: Submit copies of product schedule or list, unless otherwise indicated. COTR will return copies.

a. Mark up and retain one returned copy as a Project Record Document.

F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation" for Construction Manager's action.

G. Submittals Schedule: Submit all submittals to the PM 10 days prior to NTP.

H. Application for Payment: Comply with requirements.

I. Schedule of Values: Comply with requirements.

J. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Number of Copies: Submit copies of subcontractor list, unless otherwise indicated. COTR will return copies.
   a. Mark up and retain one returned copy as a Project Record Document.

## 2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit copies of each submittal, unless otherwise indicated. COTR will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements.

B. Coordination Drawings: Comply with requirements.

C. Contractor's Construction Schedule: Comply with requirements.

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

K. **Schedule of Tests and Inspections: Provide weld test on 5% of the welding selected by the COTR. Provide torque test on 5% of the bolting connections, locations will be selected by the COTR. These tests should be performed by a certify laboratory**.

L. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

M. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

N. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.

P. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

S. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

T. Material Safety Data Sheets (MSDSs): Submit information directly to FAA; do not submit to COTR.
1. COTR will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

## 2.3 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to COTR.

# PART 3 - EXECUTION

## 3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to COTR.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

## 3.2 COTR'S ACTION

A. General: COTR will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: COTR will review each submittal, make marks to indicate corrections or modifications required, and return it. COTR will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

C. Informational Submittals: COTR will review each submittal and will not return it, or will return it if it does not comply with requirements. COTR will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 33 00

# SECTION 02 82 00 - ASBESTOS ABATEMENT AND LCC DEMOLITION

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Applicable provisions of Division 01 - General Requirements, Drawings, and other provisions and requirements of the Contract Documents apply to work of this Section. This specification is being included as part of the bid package to be followed for the removal of asbestos and lead coated components that will be disturbed during the course of the project.

B. This Section includes the removal, control and disposal of friable and nonfriable asbestos containing materials (ACM) and lead coated components (LCC), which shall be encountered during the work at the Pasco Tri-Cities Airport Air Traffic Control Tower, Pasco, WA. The work includes, but is not limited to: the construction of temporary enclosures to isolate the work area, the establishment of negative-air pressure within the isolated work area, the removal of ACM/LCC from the isolated work area, and the packaging and legal disposal of the removed ACM/LCC from FAA property.

1. Observe all existing conditions prior to submitting a bid. Include in the bid, existing conditions and their impact, particularly to cost and health and safety of workers and occupants, and proper function and operation of the facility. Be aware of other work being performed. Failure to visit the site shall in not provide relieve from furnishing materials or performing any work that may be required to complete the work in accordance with the Contract Documents without additional cost to the FAA or Jacobs. All site visits shall be scheduled with the FAA and Jacobs.

2. The quantities, locations and the extent of work indicated are estimates, which are limited by the physical constraints imposed by occupancy of the facility. Quantities of asbestos containing materials are quantified as plan area square feet not material surface area square feet. Plan area refers to a visual horizontal or vertical flat plane. Consider all aspects of the substrates within the identified plan area. Material information and quantities were obtained from site surveys. Accordingly, variations (plus or minus 10 percent) in quantities within the limits of the work area are considered as having no impact on contract sum and contract performance period. Where additional abatement work is required beyond the above variations, the contract sum and contract performance period shall be adjusted under provisions of Division 01 of the Specifications.

C. ACM Locations - the following asbestos containing materials may be encountered during the project. Abate only the asbestos to facilitate the seismic mitigation.

| Room | Description | Material | Asbestos |
|---|---|---|---|
| Tower | throughout | 12"x !2" grey floor tile | FT-4% chrysotile |
| Tower | throughout | fire doors | assumed |
| Tower | engine generator | 12"x !2" white floor tile | FT-2% chrysotile<br>Mastic-17%chrysotile |
| Tower | engine generator | gaskets | assumed |
| Cab | exterior walkway | roof mastic | 2% chrysotile |
| Cab | roof | roofing materials | 61% chrysotile |
| Cab | roof | black tar | 8-10% chrysotile |
| **Room** | **Description** | **Material** | **Lead** |
| 112 | equipment room walls | off white paint | Below Reporting Limit |
| 112 | electrical cabinets | brown paint | Below Reporting Limit |
| Base Bldg. | exterior walls | cream paint | Below Reporting Limit |
| Cab | exterior | blue paint | Below Reporting Limit |
| Cab | roof hatch | red paint | 1550 ppm Lead |
| Tower | stair walls | white paint | Below Reporting Limit |
| 4th floor | steel | white paint | 804 ppm Lead |
| 4th floor | steel | white over brown paint | 1740 ppm Lead |
| 4th floor | stairs | grey over red paint | 9500 ppm Lead |
| Tower | throughout | White paint | Below Reporting Limit |

D. LCCs locations. Refer to Section 1.1.C for identification of areas and locations of LCC materials. Coordinate abatement work with all areas of work scheduled for the project.

E. This project may require lead paint spot abatement and lead component removal. Structural steel component removal, mechanical demolition, architectural components demolition, and electrical demolition shall be included as part of the demolition pricing.

## 1.2 REFERENCE DOCUMENTS

The following documents are included for general reference and may not be inclusive of all standards applicable for this project. The current issue of the following documents on the date of Invitation for Bids form a part of this specification and are applicable to the extent specified. Work shall conform to applicable federal, state and local government's regulations and to the requirements specified in these Contract Documents. Whenever inconsistencies occur between the referenced materials, the more stringent shall apply. The intent of these documents is to verify the Work is conducted at the highest level of safety.

American National Standards Institute (ANSI)

| | |
|---|---|
| ANSI Z87.1 | Occupational and Educational Eye and Face Protection |
| ANSI Z88.2 | Respiratory Protection |
| ANSI Z89.1 | Hard Hats |
| ANSI Z9.2 | Fundamentals Governing the Design and Operation of Local Exhaust Systems |

American Society for Testing and Materials (ASTM)

| | |
|---|---|
| ASTM C 732 | Aging Effects of Artificial Weathering on Latex Sealants |
| ASTM D 522 | Mandrel Bend Test of Attached Organic Coatings |
| ASTM D 1331 | Surface and Interfacial Tension of Solutions of Surface-Active Agents |
| ASTM D 2794 | Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) |
| ASTM D 4397 | Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications |
| ASTM E 84 | Surface Burning Characteristics of Building Materials |
| ASTM E 96 | Water Vapor Transmission of Materials |
| ASTM E 119 | Fire Tests of Building Construction and Materials |
| ASTM E 736 | Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members |
| ASTM E 1368 | Visual Inspection of Asbestos Abatement Projects |
| ASTM D 2986 | Evaluation of Air Assay Media by the Monodisperse DOP (Dioctyl Phthalate) Smoke Test |
| ASTM D 4884-96 | Standard Test Method for Strength of Sewn or Thermally Bonded Seams of Geotextiles |

Code of Federal Regulations (CFR)

| | |
|---|---|
| 29 CFR Part 1910 | Occupational Safety and Health Standards |
| Subpart I | Personal Protective Equipment |
| 1910.132 | General Requirements |
| 1910.134 | Respiratory Protection |
| Subpart J | General Environmental Controls |
| 1910.145 | Specifications for Accident Prevention Signs and Tags |
| Subpart Z | Toxic and Hazardous Substances |
| 1910.1000 | Air Contaminants |
| 1910.1001 | Asbestos |
| 1910.1025 | Lead |
| 1910.1200 | Hazard Communication |
| 29 CFR Part 1926 | Safety and Health Regulations for the Construction Industry |
| Subpart D | Occupational Health and Environmental Controls |
| 1926.51 | Sanitation |
| 1926.52 | Occupational Noise Control |
| 1926.56 | Illumination |
| 1926.62 | Lead |
| Subpart E | Personal Protective & Life Saving Equipment |
| 1926.100 | Head Protection |
| 1926.101 | Hearing Protection |
| 1926.102 | Eye and Face Protection |
| 1926.103 | Respiratory Protection |

| | |
|---|---|
| 1926.104 | Safety Belts, Lifelines, and lanyards |
| Subpart F | Fire Protection and Prevention |
| 1926.150 | Fire Protection |
| 1926.151 | Fire Prevention |
| 1926.154 | Temporary Heating Devices |
| Subpart J | Welding and Cutting |
| 1926.350 | Gas Welding and Cutting |
| 1926.352 | Fire Prevention |
| 1926.353 | Ventilation and Protection in Welding, Cutting and Heating |
| Subpart L | Scaffolds |
| 1926.450 | Scope, Application, and Definitions Applicable to this Subpart |
| 1926.451 | General Requirements |
| 1926.452 | Additional Requirements Applicable to Specific Types of Scaffolds |
| 1926.453 | Aerial Lifts |
| 1926.454 | Training Requirements |
| Appendix A | Scaffold Specifications |
| Subpart M | Fall Protection |
| 1926.500 | Scope, Applicability, and Definitions Applicable to this Subpart |
| 1926.501 | Duty to Have Fall Protection |
| 1926.502 | Fall Protection Systems Criteria and Practices |
| 1926.503 | Training Requirements |
| Subpart N | Cranes, Derricks, Hoists, Elevators, & Conveyors |
| 1926.552 | Material Hoists, Personnel Hoists, and Elevators |
| Subpart Z | Toxic & Hazardous Substances |
| 1926.1101 | Asbestos |
| Appendix F | Work Practices and Engineering Controls for Major Asbestos Removal, Renovation, and Demolition Operations |
| Appendix I | Medical Surveillance Guidelines for Asbestos |

| | |
|---|---|
| 40 CFR | Environmental Protection Agency |
| Part 61 | |
| Subpart M | National Emission Standard for Asbestos |
| Part 261 | Identification and Listing of Hazardous Waste |
| Part 763 | Asbestos |
| Subpart E | Asbestos-Containing Materials in Schools |
| Subpart G | Asbestos Worker Protection |

| | |
|---|---|
| 49 CFR | Department of Transportation |
| Part 173 | Shippers - General Requirements for Shipments and Packaging |

National Institute for Occupational Safety and Health (NIOSH). Department of Health and Human Services

| | |
|---|---|
| Method 7400 | Fibers |

| | |
|---|---|
| Method 7402 | Asbestos Fibers |
| Method 7082 | Atomic Absorption; Flame |
| Method 7105 | Atomic Absorption; Graphite Furnace |

National Fire Protection Association (NFPA)

| | |
|---|---|
| 70 | National Electrical Code |
| 241 | Construction and Renovations |
| 701 | Standard Method of Fire Tests for Flame-Resistant Textiles and Films. |

Compressed Gas Association (CGA)

| | |
|---|---|
| CGA G-7 | Compressed Air for Human Respirators |
| CGA G-7 | Commodity Specifications for Air |

Underwriters Laboratories (UL)

| | |
|---|---|
| UL 586 | High-Efficiency Particulate Air Filter Units |

Other Standards

| | |
|---|---|
| NSF 49 | National Sanitation Foundation Class II (Laminar Flow) Biohazard Cabinetry |

Federal Aviation Administration (FAA) Orders

| | |
|---|---|
| Article 77 | Agreement between DOT/FAA and the National Air Traffic Controllers Association (NATCA) |
| Article 52 | Agreement between DOT/FAA and the Professional Airways System Specialists (PASS) |
| Order 1050.20A | Airway Facilities Asbestos Control |
| Order 3900.19B | FAA Occupational Safety and Health Program |
| Local Order | Facility Asbestos Abatement Contingency Plan |

State Requirements

| | |
|---|---|
| Chapter 296-62 | WAC, Part 1-1, Asbestos, Tremolite, Anthophyllite and Actinolite, General Occupational Health Standards |
| Chapter 296-65 | WAC, Dept. of Labor and Industries, Asbestos |

1.3 DEFINITIONS

A. The following terms used in the text shall be defined as follows:

1. CIH: An Industrial Hygienist certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.
2. Class I Asbestos Work: Activities involving the removal of thermal system insulation (TSI) and surfacing ACM.
3. Class II Asbestos Work: Activities involving the removal of ACM that is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of caulk.
4. Class III Asbestos Work: Repair and maintenance operations where ACM, including TSI and surfacing ACM, is likely to be disturbed. Operations may include drilling, abrading, cutting a hole, cable pulling, crawling through tunnels or attics and spaces above the ceiling, where asbestos or asbestos-containing debris is actively disturbed. Removal of small amounts of ACM that would fit into a single 60 x 60 inch glove bag or disposal bag may be classified as a Class III job.
5. Class IV Asbestos Work: Maintenance and custodial construction activities during which employees contact but do not disturb ACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities. This may include dusting surfaces where ACM waste and debris and accompanying dust exists and cleaning up loose ACM debris from TSI or surfacing ACM following construction.
6. Competent Person: On all construction work sites, the contractor shall designate a competent person having the qualifications and authority for verifying worker safety and health as required by 29 CFR 1926.20 and for overseeing asbestos-related work as required by 29 CFR 1926.1101. The duties of the competent person include, but are not limited to, the following: establishing the negative pressure enclosure, verifying its integrity, controlling entry into and exit from the enclosure, and verifying workers wear required personal protective equipment and are trained in the use of hygiene facilities, work practices, and decontamination procedures specified in this specification and applicable regulations.
7. COTR: Contracting Officer's Technical Representative
8. Critical Barrier: 2 Layers of 6-mil polyethylene sheeting sealed over the openings in the work area (or other similarly placed physical barrier) sufficient to prevent airborne fibers in the work area from migrating to an adjacent area.
9. Demarcated Area: An area that has been isolated from the remaining portions of the building by installing critical barriers and/or flapped barriers on the doorways/entrances/and other openings to the area, posting the area with OSHA approved warning signage to prevent unauthorized entry, and providing HEPA equipped ventilation equipment to filter the air and provide directed airflow out of the area.

10. Friable ACM: A term as defined in 40 CFR 61, Subpart M and EPA 340/1-90-018 that means any material containing more than one percent asbestos as determined using the method specified in 40 CFR 763, Appendix A, Subpart F, Section 1, Polarized Light Microscopy, that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
11. High Efficiency Particulate Air (HEPA) Filter: A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.
12. Immediately: When the contractor is on-site, immediately refers actions required to take place within 15 minutes of being notified. When the contractor is off-site, immediately refers to actions required to take place within 2 hours of being notified.
13. Monitoring Contractor (MC): contracted as a third party to the FAA, to perform inspections and air monitoring.
14. Presumed Asbestos-Containing Material (PACM): Thermal system insulation and surfacing material found in buildings constructed no later than 1980.
15. Permissible Exposure Limit (PEL): OSHA PELs are worker exposure limits regulating the concentration of a substance in air that shall not be exceeded. (1) An airborne concentration of asbestos of 0.1 fibers per cubic centimeter of air (f/cc) as an eight- (8) hour time weighted average (TWA). (2) An airborne concentration of asbestos of 1.0 f/cc as averaged over thirty- (30) minutes (Excursion Limit).
16. Time-Weighted Average (TWA): The TWA is an 8-hour time weighted average concentration of airborne asbestos fibers (longer than 5 micrometers) per cubic centimeter of air that represents the employee's 8-hour workday as determined by Appendix A of 29 CFR 1926.1101.

1.4 PROVIDE THE FOLLOWING PRE-BID CONTRACTOR QUALIFICATION SELECTION SUBMITTALS

A. Contractor Identification: The Abatement Contractor shall be licensed by the State of Washington for the purpose of removal, encapsulation, enclosure, demolition, and maintenance of structures or components covered by or composed of asbestos containing materials and lead containing coatings.

1 Company name and address (street and mailing if different).
2 Name of individual supplying information.
3 Name of parent company, if any.
4 State Business License
5 Asbestos Abatement Contractors License.
6 Lead Abatement Contractors License.
7 Project Manager Name.
8 Address of office responsible for this project.
9 Telephone number.

B. Insurance: Contractor shall have at a minimum the following insurance.

| | |
|---|---|
| Commercial General Liability | $5 million per occurrence and aggregate with bodily injury and property damage coverages |
| Automobile Liability | $5 million per occurrence and aggregate with bodily injury coverage |
| Worker's Compensation | Consistent with state statutory requirements |
| Employer's Liability | $2 million per occurrence and each employee |
| Pollution Liability | $5 million per occurrence and aggregate |

C. Staff:

1. Number of full-time company employees.
2. Names and resumes of local office Company Officers.
3. Names of local office full-time field supervisory personnel, and years of asbestos and lead removal experience, include resumes.
4. Names of local office part-time field supervisory personnel, and years of asbestos and lead removal experience, include resumes.
5. Number of local office full-time foreman and laborers.
6. Number of local office part-time foreman and laborers.
7. Name of employees' union(s), if any.
8. Usual ratio of supervisory to labor personnel used.

D. Experience:

1. Briefly describe company history.
2. Provide evidence verifying the company has a minimum of three (3) years of successful abatement experience working in the State of Washington.
3. Provide a representative list (at least three projects) of successful abatement projects working in occupied facilities. List project name, date, size, duration, removal cost, references and telephone numbers for each project.
4. State average yearly dollar volume of abatement removal work over the past two years.

E. Regulatory (Past 5 Years):

1. List and explain warnings or citations received from Federal, State or Local Regulatory Agencies related to asbestos and/or lead abatement activities. Include project name, date and resolution.
2. List assessed penalties, liquidated damages or schedule overruns and resolutions, which occurred. Include contract terminations.
3. List projects where the owner, architect or consultant halted project activities. State project name, date, reason for shutdown and resolutions.

4. List asbestos or lead related legal proceedings/claims in which the company (or employees scheduled to participate in this project) have participated or are currently involved. Include descriptions of role, issue and resolution to date.

F. Medical Requirements: Provide a copy of the company's Medical Surveillance Program.

G. Abatement Training: Provide a copy of the company's training program for supervisors and laborers. The program shall include, but is not limited to, how often training is conducted, who conducts the training, when it is conducted, what the duration of the program is and how documentation of training is accomplished for asbestos and lead.

H. Respiratory Protection: Provide a copy of the company's respiratory protection training program.

I. Health and Safety Program: Provide a copy of the company's health and safety program.

J. Submittal Notarization: Sign and date submittal by an officer of the company, indicating name and title of person signing.

1.5 PROVIDE THE FOLLOWING POST-AWARD CONTRACTOR SUBMTTALS (Provide two copies of the following):

A. Abatement Documentation:
1. Contractor State Licenses
    a. State Business License
    b. State Asbestos Contractors License
    c. State Lead Contractors License
2. Asbestos and Lead (as required) abatement regulatory notifications
3. An abatement schedule in time line format shall include the following (detail each step (as necessary))
    a. Preparation Time
    b. Notification Start Date
    c. Duration of Demolition/Abatement Activities
    d. Duration of Cleaning
    e. FAA/CIH Inspection Time
    f. Encapsulation and Drying Time
    g. Final Clearance
    h. Tear Down
4. Interface of trades involved in the construction to support the sequencing of asbestos-related work including electricians providing electrical power for each containment and plumbers providing water supply and/or sanitary sewer connections, mechanical plumbing separations.
5. Negative Pressure Calculations for each containment.

6. Disposal Requirements:
    a. Asbestos Transporter Identification
    b. Hazardous Waste Transporter Identification
    c. Asbestos Landfill
    d. Hazardous Waste Landfill

B. Prepare a Safety, Health and Accident Prevention Plan (SHAPP) for all abatement work being performed. Incorporate the requirements PSC Asbestos Abatement Contingency Plan into the SHAPP. At a minimum, the SHAPP shall include the following:

1. Emergency procedures include injury, first aid, fire and evacuation shall be in written form and prominently posted on-site. Everyone, prior to entering the work area, shall be required to read these procedures and understand the work site layout, location of emergency exits and emergency procedures.
2. Emergency planning shall include a Hazard Communication Program (HAZCOM). A written HAZCOM program shall be established and implemented according to 29 CFR 1926.59. Copies of Material Data Sheets (MSDS) for chemicals brought on-site by the Contractor shall be attached to the written HAZCOM Program. The FAA has the option of disallowing the use of some chemicals due to high toxicity, objectionable odors, and when more suitable substitutes are available.

C. Project Personnel

1. Provide number of full-time laborers that shall be assigned to this project.
2. Provide number of crews and shifts for this project.
3. Provide documentation for each employee including:
    a. A current asbestos and lead training certificate, employee state license, medical surveillance document, and respirator fit test document. A copy of these documents shall be provided in this submittal or before work on site is performed.
    b. Maintain current copies of employee-accredited asbestos and lead training certificates, state licenses, medical surveillance and respirator fit test documents at the work site.

D. Laboratories: Submit documentation that the laboratory(ies) to be used for Personnel Samples on this contract is accredited.

1. For asbestos air samples the laboratory shall be accredited by the American Industrial Hygiene Association (AIHA) for Phase Contrast Microscopy and has successful completion in the last four rounds in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program. All technicians analyzing asbestos air samples shall be a current member in the Asbestos Analyst Registry (AAR).

2. For lead air samples, the laboratory shall be accredited by the American Industrial Hygiene Association (AIHA) and participates in the Environmental Lead Laboratory Accreditation Program (ELLAP).

E. Product Data: Submit Manufacturer Product Data on the following:
1. HEPA equipped Air Filtration Devices (AFDs) Product Data
2. HEPA equipped vacuum unit Product Data
3. Disposable Clothing Product Data
4. Respirator(s) Product Data
5. Portable Shower Product Data
6. Wetting Agent Product Data and MSDS
7. Encapsulant Product Data and MSDS
8. Chemical Stripper Product Data, MSDS, and Manufacturer recommended work practices for the product
9. Spray Adhesive Product Data and MSDS
10. Low Odor Mastic Remover Product Data and MSDS
11. Polyethylene Sheeting Product Data
12. Waste Water Filter and Equipment Product Data
13. Airless Sprayer Product Data
14. Asbestos Disposal Bag Product Data

F. Miscellaneous: Provide a copy of written notification to any rental company concerning the intended use of rental equipment (including scaffolding), the possibility of asbestos and lead contamination, and the decontamination procedures that shall be used prior to the return of the equipment.

G. Certified Industrial Hygienist: If a Certified Industrial Hygienist is being used by the abatement company to assemble the abatement work plan, provide the name of the CIH and a copy of the CIH's current ABIH certification.

H. Submittal Signature: The submittal shall be approved, signed and dated by an officer of the company.

1.6 ONGOING PROJECT SUBMITTALS

A. Submit required documentation for new employees, equipment, materials or chemicals that arrive on-site at least one day prior to arrival on-site.
B. Submit on a weekly basis, previous week's daily field notes and containment sign in sheets for the project.
C. Submit delivery manifest 48 hours in advance of delivery date.
D. Submit OSHA compliance monitoring results within 48 hours of collection date.
E. Submit required Federal, State and Local documentation regarding the transportation and disposal of ACM and lead containing materials at the earliest possible time.

## 1.7 PROJECT CLOSEOUT SUBMITTALS

A. Closeout Submittal: Within 30 days of the completion of the work, the Abatement Contractor shall provide a closeout submittal. The closeout submittal shall consist of the following documents:

1. Written certification on final completion of the Work that the Work complies with Contract Documents.
2. Certification that items on punch list issued at substantial completion have been completed or corrected and that tools, construction equipment and surplus materials have been removed from the site.
3. Daily logs for abatement work.
4. Entry/exit logs for each containment.
5. Copies of Waste Manifests for the project.
6. Copies of asbestos and lead worker and supervisory personnel certifications, fit test records, and physicians written opinion forms.
7. Copies of air monitoring results.

## 1.8 PROJECT CONDITION

A. The work consists of the containment and removal of asbestos containing materials and lead containing coatings. Local, state, FAA Orders and federal rules, regulations and laws govern the work.

B. The FAA shall employ an independent Monitoring Contractor (MC) to verify conformance of the abatement contractor to the Contract Documents.

C. The Abatement Contractor shall cooperate with the FAA and the Monitoring Contractor. This cooperation shall include allowing access to the work areas to allow for visual and air monitoring, collecting samples, providing requested data on personnel, equipment, scheduling and facilitating FAA monitoring of the work.

D. Do not allow anyone access to the containments who are not authorized by the FAA to enter the site of work.

E. Provide warning labels in prominent locations adjacent to asbestos containing material identified in this specification to remain. The labels shall be installed before demolition or construction starts under this contract. The labels shall remain in place, after completion of abatement work, as the property of the FAA. The labels shall be printed in large, bold letters on a contrasting background and conform to the requirements of 29 CFR 1926.1101 and contain the following information:

**DANGER**
**CONTAINS ASBESTOS FIBERS**
**AVOID CREATING DUST**
**CANCER AND LUNG DISEASE**
**HAZARD**

F. Immediately notify the FAA in the event of a breach of any regulated work areas. Coordinate construction and abatement activities with the FAA in order to prevent any disruption of FAA operations.

1. Disruption of operations for any amount of time could jeopardize the safety of the flying public and may result is criminal prosecution.
2. The FAA shall occupy the facility during construction activities. Cooperate fully with the FAA during construction operations to minimize conflicts and to facilitate FAA usage. Perform the work so as not to interfere with FAA operations. Provide FAA personnel access to equipment remaining in service. Construct containments to allow travel routes for FAA personnel and to allow moving of necessary equipment.
3. The work shall be limited to specific areas of the building and site. Unlimited access is specifically not permitted. Arrangements for use of the buildings and site shall be restricted to those areas specifically allowed by FAA. Other contractors shall be working at the site. Cooperate with other on-site contractors and prevent work by others from jeopardizing the asbestos work. Construction planning meetings shall be held once a week to discuss other projects that could adversely impact the asbestos abatement project.

## 1.9 WORK BY FAA

A. Environmental monitoring and sample analysis (by separate contract).
B. The shutdown, lockout/tag out and re-start of mechanical equipment, and all energized source.
C. The shutdown, lockout/tag out and re-start of electrical circuits and equipment.

## 1.10 NOTIFICATION

A. The Contractor is responsible for asbestos and lead related notifications, permits, and associated fees prior to and following abatement. Notify the FAA ten (10) working days prior to the start of the on-site abatement operations.

1.11 HOURS OF WORK

A. Strictly adhere to work hours as specified in these specifications and in Division 01. Deviations shall be pre-approved, in writing by the FAA 48 hours in advance. Noisy activities may be limited to the hours of 10 pm to 6 am. Work methods that result in unacceptable disturbance or rejection by the FAA shall not result in an increase to the contract sum or extension of the contract time.

B. Request to change work hours or overtime shall require the FAA written approval prior to implementing changes. The rejection of request for change shall not result in an increase to the contract sum or extending contract time.

1.12 SCHEDULE

A. Adhere to the schedule as defined in the contract documents.

1.13 PRECONSTRUCTION MEETING

A. The FAA shall schedule a preconstruction meeting after the Notice to Proceed. The minimum agenda shall consist of the following:

1. The FAA will identify the third party monitor.
2. Establishing chain of authority.
3. Abatement schedule.
4. Critical work sequencing, scheduling.
5. Processing of field decisions.
6. Distribution of Submittal Documents.
7. Review the facility Asbestos Contingency Plan.
8. Submittals: schedules, shop drawings, product data and samples, manufacturer's certifications of products, manpower reports, major equipment deliveries and priorities, procedures for maintaining record documents, use of FAA facilities by contractor (access, parking, office area, storage area, and waste load-outs), safety and first aid procedures, security procedures and housekeeping procedures.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Material and Equipment - Prior to bringing material and equipment on site it shall be clean of environmental contamination or debris.

A. Materials and products shall comply with the requirements of 29 CFR 1910.134, 29 CFR 1926.62 and 29 CFR 1926.1101.

B. Polyethylene Sheeting: ASTM D4397, 6 mils thick, flame-retardant. Sheeting shall meet flammability requirements of NFPA 701, and flame spread and smoke density requirements of ASTM E84.

C. Duct Tape: Waterproof, pressure-sensitive adhesive tape, 3 mils (min.) thick by 3 inches wide for criticals, containment seams and repairs, and decon units; 2 inch wide may be used only on disposal bags and personnel clothing.

D. FSK Tape: Waterproof, pressure-sensitive adhesive tape, 2 mils (min) thick by 3 inches wide for criticals, containment seams, repairs, and decon units.

E. High Efficiency Particulate Air (HEPA) Filtered Vacuum: Vacuum(s) shall be:

1. Be capable of removing 99.97% of the asbestos particles (0.3 microns or greater in diameter) from the air.
2. Be portable.
3. Be equipped with hoses of sufficient length to reach areas behind pipes, ducts and other obstacles.
4. Have new filters installed at the beginning of the project. The filters shall be changed on a regular basis for the duration of the project.
5. Be tested and certified in accordance with NSF-49.
6. Be removed from the FAA property immediately if they are found to be non-conforming.

F. HEPA Filtered Ventilation System: Portable ventilation system designed to exhaust and clean the air inside the enclosure prior to exhausting to the outside of the building. The units shall have at least three (3) filter stages, including readily accessible pre- and secondary filters, and a final filter, which shall be a High Efficiency Particulate Air (HEPA) filter. The units shall:

1. Be capable of capturing particles having a diameter of 0.3 micrometers or greater in size with an efficiency of 99.97%.
2. Be equipped with the automatic restart feature.
3. Have new filters installed prior to the onset of abatement activities. The filters shall be changed on a regular basis for the duration of the project.
4. Be located as far away from the fresh air intakes as possible.
5. Be tested and certified in accordance with NSF-49.
6. Be removed from the FAA property immediately if they are found to be non-conforming.

G. Ducts: All HEPA ventilation ducts from the negative air machines shall be constructed of new and unused tubing. The attachment of the ducts shall be spliced by means of sheet metal connectors and sealed in order to verify an adequate seal. The attachment of the ducts shall withstand the force from the machines for the entire duration of the project. The Abatement Contractor's Superintendent shall have the responsibility of inspecting the integrity of the exhaust ducts on a regular basis throughout the duration of the abatement activities.

H. Wetting Agent: Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the asbestos-containing material and in retardation of fiber release during disturbance of the material, equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50 percent polyoxyethylene ester and 50 percent polyoxyethylene ether mixed with five gallons of water.

I. Encapsulant: Provide an encapsulant/sealant, which shall be compatible with the existing surfaces, and one, which shall act as a suitable substrate for future surface coatings. Taint (or tint) the encapsulant with a contrasting color, to be approved by the FAA, so as to identify coverage.

J. Airless Sprayer: Hand-pump type, pressure-can sprayer fabricated of either metal or plastic, equipped with a wand at the end of a hose capable of delivering a stream or spray of liquid under pressure.

K. Respirators: Personal protective breathing equipment shall be in accordance with 29 CFR 1926.62 and 29 CFR 1926.1101.

L. Signs and Labels: Signs and labels shall be provided in accordance with 29 CFR 1926.62, 29 CFR 1926.1101 and 40 CFR 61 subpart M.

M. Disposal Bags: Leak-tight, 6 mil thick clear polyethylene bags with appropriate hazard warning, per EPA regulations 40 CFR 61.150 (a) (1) (v), OSHA requirement 29 CFR 1926.1101 and DOT.

N. Miscellaneous Materials: Provide tangible supplies (such as coveralls, duct tape, soap, shampoo, towels, etc.), for persons entering the removal area. This includes FAA personnel, monitoring contractor and other persons approved for entry.

O. Air Monitoring Equipment. The equipment shall include, but not be limited to:
1. Low-volume, battery powered, body-attachable, portable personal pumps with a power pack capable of sustaining the calibrated flow rate for a minimum of 10 hours.
2. Standard 25-millimeter diameter, 0.8 micron pore size filters and cassettes in accordance with 29 CFR 1926, 1101, for asbestos personal air sampling.
3. Standard 35-millimeter diameter, 0.8 micron pore size filters and cassettes in accordance with 29 CFR 1926.62, for lead personal air sampling.

4. A flow calibrator capable of calibration to within plus or minus 2 percent of reading over a temperature range of minus 20 degrees C (minus 4 degrees F) to plus 60 degrees C (140 degrees F) and traceable to a National Institute of Standards and Technology (NIST) primary standard.

PART 3 - EXECUTION

3.1 GENERAL DESCRIPTION OF WORK

A. Comply with the requirements of these Specifications and ANSI Z9.2, 29 CFR 1910.145, 29 CFR 1926.62, 29 CFR 1926.1101 and 40 CFR 61 and 763. The most stringent of codes shall apply.

B. Environmental Monitoring: Environmental monitoring for airborne asbestos fiber concentrations, airborne lead concentrations, containment pressure differential, and third party inspections shall be accomplished by the FAA's monitoring contractor, who shall be under a separate contract with the FAA. This monitoring contractor shall respond directly to the FAA.

C. Wet Removal: ACM shall be removed using an amended water wet removal method as recommended by the EPA 340/1-90-019 Asbestos NESHAP Adequately Wet Guidance Document and OSHA. The Abatement Contractor shall provide for the continual prevention of excessive water accumulation throughout the duration of the project and shall post a minimum of one abatement worker to monitor adjacent spaces of the facility for water leakage outside the containment at all times when removal is in progress.

D. Housekeeping: Essential parts of abatement dust control are housekeeping and clean up procedures. Maintain surfaces of the abatement work area free of accumulations of asbestos or lead debris. Give meticulous attention to restricting the spread of dust and debris. Keep waste from being distributed over the general area. The use of compressed air to move waste material or dust is prohibited. Material generated during gross removal shall be packaged and removed from the containment at the end of each shift and shall not be allowed to accumulate inside the work area. The FAA shall inspect the removal area daily for residual debris.

E. Abatement Superintendent: Designate a qualified employee as abatement superintendent. The superintendent shall meet the requirements of a competent person/supervisor in accordance with OSHA and possesses at least 5 years asbestos/lead abatement experience. The competent person shall perform the following:

1. Oversee all abatement personnel performing any abatement related work,
2. Oversee construction of all enclosures, including the worker decontamination chamber and the waste load-out chamber.
3. Control entry to and exit from the removal area.
4. Supervise all employee exposure monitoring required by OSHA.

5. Verify the proper use of protective clothing and equipment.
6. Verify that all occupants of the removal area are properly trained and certified.
7. Verify the proper use of hygiene facilities and decontamination procedures.
8. Verify that all engineering controls are functioning per design.

F. The abatement contractor will maintain radio or telephone communication with the on-site Jacobs superintendent.

G. Disposal Supervisor: Designate a qualified individual to oversee the following "clean-up", "housekeeping" and disposal tasks in accordance with these Specifications, specifically:

1. Continuous floor and horizontal surface clean up.
2. Continuous clean up of abatement debris.
3. Continuous collection and disposal of water build-up. No puddling or ponding water shall be tolerated. Water or solvent seeping through the concrete floor or down the curtain wall to a lower floor is not permitted. Polyethylene sheeting shall be used to protect equipment in the lower level if leakage is possible.
4. Regular inspection of disposal procedures to verify conformance with this specification as well as all Federal, State and Local Laws.
5. The disposal supervisor shall be responsible for notifying the FAA prior to delivery of any disposal vehicles. The FAA shall conduct an inspection of every vehicle to verify it is delivered in a clean and empty condition. The rejected disposal vehicle shall be replaced at no additional cost to the FAA.

H. Inspection by the FAA: During abatement work, the work shall be subject to on-site inspection by the FAA, who may be assisted by the monitoring contractor.

I. Work Stoppage: The FAA shall issue a "stop work" order for any of the reasons listed below. No work shall be allowed to resume until the conditions stabilize and upon approval from the FAA. Standby time required to identify and resolve the problem shall be at the expense of the Abatement Contractor and may include the costs incurred by the extended efforts of the FAA's Monitoring Contractor.

1. If asbestos air monitoring results outside the containment indicate the presence of airborne asbestos outside the containment is greater than 0.02 f/cc above baseline.
2. If lead air monitoring results outside the containment indicate the presence of air lead outside the containment to be greater than 30 ug/$m^3$.
3. If excessive water accumulations appear or if water leakage or gross contamination is detected in areas adjacent to the removal area.
4. If the work is found to violate specified requirements.

3.2 PERSONAL PROTECTIVE EQUIPMENT

A. Personal Protective Equipment (PPE): Besides providing PPE for their worker's, provide disposable coveralls for FAA representatives, monitoring contractor and authorized visitors. Abatement contractor respiratory protection shall comply with 29 CFR 1910.134, 29 CFR 1926.62, and 29 CFR 1926.1101.

3.3 TEMPORARY FACILITIES AND UTILITIES

A. Field Office: The Abatement Contractor shall furnish their temporary office space.

B. Temporary Electric: The Abatement Contractor shall provide and maintain a specified secondary electrical power center for asbestos removal operations throughout the abatement period. Connection locations and lockout/tag out shall be as directed by the FAA and electric power shall be provided at no charge to the Abatement Contractor. Under no circumstances shall FAA existing electrical circuits be used by the Abatement Contractor for any purpose, without prior authorization from the FAA.

1. The Contractor shall provide:

a. Main distribution panel with a capacity of 110-120 volts, single phase and 60 hertz and of sufficient capacity to service the complete project.
b. Circuit protection for each circuit.
c. Ground fault interruption protection for all circuits.
d. Grounded, UL listed extension cords from power centers to the point of operation.

**UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR BE ALLOWED TO CONNECT INTO THE CRITICAL POWER SOURCE AT THE FAA FACILITY**

C. Temporary Lighting: The Abatement Contractor shall provide temporary illumination for construction needs, safe working conditions, public safety and security lighting in compliance with the requirements of 29 CFR 1926.26 and subpart D. Supports and ties shall be constructed of non-conductive materials and exposed two wire conductors shall not be allowed. Lamps shall be covered with safety guards or deeply recessed in reflector and lamps shall not be suspended by their electric cords unless cord and fixture is designed for that purpose.

D. Temporary Water: The Abatement Contractor shall provide and maintain temporary water service connection throughout the abatement period. The temporary water shall be equipped with an approved backflow protection device. The abatement contractor shall install valves at tie-in locations that shall be turned off and locked-out and tagged-out when the contractor is not present on-site.

E. Temporary Sanitary: The Abatement Contractor shall provide and maintain temporary sanitary service connection throughout the abatement period.

F. Existing Systems: The Abatement Contractor may make written arrangements with the FAA to modify, supplement and extend an existing system to meet temporary requirements for the project, subject to approval by the FAA. If existing systems are modified, supplemented and/or extended, the Abatement Contractor shall not overload the system or interfere with FAA's normal use of the system.

G. Removal of Temporary Systems: The Abatement Contractor shall remove all temporary services and repair all damage caused by the contractor and restore to original conditions.

## 3.4 ISOLATION OF THE WORK AREA

A. Prepare the work areas in accordance with 29 CFR 1926.62 and 29 CFR 1926.1101, Appendix F, and as detailed in this specification and the AAP for the work areas. All efforts shall be made to verify building ventilation systems supplying air into or returning air out of the regulated area shall be shut down and isolated by lockable switch or other positive means in accordance with 29 CFR 1926.417 and the facility's lockout/tagout program.

B. Establishing Negative Pressure: Establish negative pressure in accordance with the recommendations of 29 CFR 1926.1101 Appendix F.

1. Maintain negative pressure for containments between negative 0.02 and negative 0.10 inches of water gauge. The intent of the design negative pressure is to prevent the contamination of non-abatement areas.

2. Air Filtration Devices shall exhaust to the buildings exterior a minimum distance of thirty feet from the buildings HVAC make-up air.

C. Pre-Abatement Inspection: Upon completion of the work area containment and the establishment of negative pressure, the Abatement Contractor shall receive notification from the FAA before removal work is initiated.

D. Work Place Entry and Exit: Enforcement is the responsibility of the Contractor's Abatement Supervisor. Entry shall be controlled to prevent unauthorized, accidental access into the containment area.

E. Maintenance of Enclosure System: The FAA shall be immediately notified of problems that have developed such as a puncture of the containment system, electrical power loss, GFCI failure, equipment failure, accidental discharge into occupied areas, and partial collapse of the critical barrier (plastic sheet fails to remain in place), etc.

3.5 DECONTAMINATION UNITS - At a minimum change areas and showers shall be maintained at a minimum of 60 degrees Fahrenheit.

A. Worker Decontamination Unit: Provide a detailed plan of the decon chamber and location to the FAA for approval prior to beginning construction. Seal vertical and horizontal surfaces in accordance with these specifications. The chamber shall be watertight; the Contractor shall be liable and responsible to the FAA for any leaks/damages occurring during the abatement activities. The worker decontamination chamber shall consist of, at a minimum, a clean room, an airlock, a shower area, a second airlock and a dirty room. Provide lockers for each asbestos worker. Keep street clothing and street shoes in locker. While in removal area, only disposable protective clothing may be worn, reuse will not be allowed nor shall laundering be acceptable. Shoes and undergarments worn in the removal area shall not be removed without being thoroughly cleaned in the shower first and then properly bagged. Locate showers between the decontamination room and the clean room. The shower shall be equipped with hot (Contractor furnished) and cold running water. The Contractor shall not use prefabricated units without prior acceptance. Quantity of shower units shall comply with 29 CFR 1926.51(f)(4).

1. Each person entering the removal area shall shower upon exiting. Do not use the worker decontamination unit for equipment or waste decontamination. The door to the decontamination unit, on the clean side, shall be lockable. Provide the FAA with two (2) keys to the lock, or the combination. The door shall be locked during hours when abatement work is not being performed.

B. Equipment and Waste Decontamination Unit: Provide a detailed plan of the proposed equipment and waste decontamination unit and location prior to the beginning of construction. The unit shall be maintained watertight; the Contractor shall be responsible for leaks/damages occurring during the abatement activities. The equipment and waste decontamination unit shall consist of, at a minimum, a clean room, an airlock, a wash station, a second airlock and an equipment room. Contractor shall not use prefabricated units without prior acceptance.

1. The door to the bag-out chamber, on the clean side, shall be lockable. Provide the FAA with two (2) keys to the lock, or the combination. The door shall be locked during hours when abatement work is not being performed.

C. If the Equipment and Waste Decontamination Unit is located on the exterior of the building, the unit must be constructed with a hard shell (i.e. Plywood) with securable doors and locks.

D. Wastewater: Water produced from the decontamination of persons, equipment or waste shall be collected and filtered through a system capable of trapping particles 5 microns or larger (unless local regulations are more stringent), specifically designed to remove asbestos fibers and approved by EPA. The used filters shall be disposed of as asbestos-contaminated waste. Comply with any local wastewater systems regulations regarding the disposal of wastewater from asbestos abatement activities.

3.6 ABATEMENT PROCEDURES

The Contractor shall assemble a Work Plan detailing the procedures to be employed when asbestos containing materials or lead containing coating are to be disturbed.

3.7 PROCEDURE FOR DISPOSAL

A. Asbestos: Collect asbestos waste, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing, which may produce airborne concentrations of asbestos fibers, and place in sealed impermeable asbestos bags, boxes drums or other approved containers. All wrapped asbestos material shall be contained in a minimum of two layers of 6-mil polyethylene sheeting, or equivalent. All bagged debris shall be double bagged at a minimum. Place the generator label between the outer bag and the inner, with the label able to be read through the outer bags. The final asbestos waste bag shall be goose necked. Each bag shall be clear and be pre-printed with an asbestos warning label. Include site-specific labels as required by the local jurisdiction. At a minimum, identify waste bags and containers with waterproof labels as follows:

**Federal Aviation Administration**
**Pasco Tri-Cities Airport ATCT (PSC)**
**3601 North 20th Avenue**
**Pasco, Washington 99301**
**(Name of Abatement Contractor)**

1. Dispose of waste asbestos material at an Environmental Protection Agency (EPA) or local-approved landfill off FAA property. For temporary storage, store sealed, impermeable bags in asbestos waste drums or waste storage containers. Storage of waste shall be in an on-site trailer, truck, or dumpster approved for transportation of the ACM waste to the landfill. Transport the asbestos waste directly from the FAA facility to the landfill. Procedure for hauling and disposal shall comply with 40 CFR 61 (Subpart B), state, regional, and local standards. Workers unloading the ACM waste shall wear appropriate respirators and personal protective equipment when handling asbestos materials at the disposal site. A fully-sealed and plastic lined dumpster, truck van or trailer shall be used for transportation of all ACM wastes. The Waste Manifests shall be prepared by the contractor and signed by the Generator (FAA), the Waste Transporter and the Approved Landfill.

2. Minimum requirements for a waste manifest are as follows:

   a. Contain a unique number.
   b. Be signed by generator when shipping.
   c. Be signed by transporter when material is picked-up.
   d. Be signed by disposal facility when received.
   e. Name and address of pick-up site.
   f. Estimated quantity of waste.
   g. Specific location within the building where waste was generated.
   h. Type and number of bags and drums used at each specific location within the building.
   i. Name of Transporter.
   j. Disposal site name, location and EPA identification number.
   k. Copies of the manifest signed by the generator, transporter and disposal site shall be maintained by each entity.

3. The ACM waste shipment shall be transported directly from the job site to the EPA approved landfill. Notify the landfill of the date and time the ACM waste shall arrive at the landfill. The landfill shall have a hole excavated to receive the ACM waste upon arrival. The waste containers shall be hand-placed into the hole, not tossed or thrown, and immediately covered with 6 inches of soil. Provide asbestos waste shipment records to the FAA within three (3) days after delivery of the ACM to the landfill.

B. Lead: Pending TCLP testing (TCLP testing is for painted materials being disposed of in a landfill, otherwise collect metal components and recycle in accordance with local rules and regulations), collect lead waste, scrap, debris, bags, containers, equipment, and lead-contaminated clothing and place in sealed, impermeable containers. Properly label each container including identification of the type of waste (40 CFR 178) and the date the drum was filled. The labeling shall include the following additional information:

**Federal Aviation Administration**
**Pasco Tri-Cities Airport ATCT (PSC)**
**3601 North 20th Avenue**
**Pasco, Washington 99301**
**(Name of Abatement Contractor)**

1. Perform TCLP tests (not required for materials being recycled) on the painted material being removed to determine if the material requires disposal as a hazardous waste or can be disposed of as a solid waste. Dispose of hazardous waste lead material at an Environmental Protection Agency (EPA) or local-approved hazardous waste treatment, storage, or disposal facility off FAA property. Comply with land disposal restriction notification requirements as required by 40 CFR 268. An area for interim storage (less than 90 days) of lead waste-containing drums shall be assigned by the FAA. Procedure for hauling and disposal shall comply with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265, and with state, regional, and local standards. Test results shall be submitted to the FAA prior to transportation off the site.

2. The Generator (FAA), the Waste Transporter (Contractor) and the Approved Landfill (Disposal Facility) shall sign waste Manifests. Minimum requirements for information included on the waste manifest include:

    a. Contain a unique number.
    b. Be signed by generator when shipping.
    c. Be signed by transporter when material is picked-up.
    d. Be signed by disposal facility when received.
    e. Name and address of pick-up site.
    f. Estimated quantity of waste.
    g. Specific location within the building where waste was generated.
    h. Type and number of bags and drums used at each specific location within the building.
    i. Name of Transporter.
    j. Disposal site name, location and EPA identification number.
    k. Copies of the manifest signed by the generator, transporter and disposal site shall be maintained by each entity.

## 3.8 ABATEMENT AIR MONITORING

A. Personal Monitoring: The Abatement Contractor is responsible for Personal Samples required in accordance with OSHA. An independent American Industrial Hygiene Association accredited laboratory shall be used to analyze air samples in accordance with OSHA. Copies of the results of the air samples shall be furnished within 3 days following the day in which they were collected and shall notify monitored employees.

B. Environmental Monitoring: Environmental monitoring for area airborne asbestos fiber count and area airborne lead concentrations shall be under a separate contract to the FAA as a third party monitoring contractor.

1. Background Monitoring: Background samples shall be collected prior to the isolation of the work area.

2. Abatement Monitoring:
    a. Prior to asbestos abatement, the monitoring contractor shall collect a minimum of two air samples in the work areas.
    b. Prior to lead coatings abatement, the monitoring contractor shall collect a minimum of two air samples in the work areas.

3. Clearance Monitoring:
    Asbestos: The Abatement Contractor shall notify the FAA when the work areas are ready for clearance air monitoring. The FAA shall arrange to sample the air in the work area for airborne fiber concentrations in accordance with 40 CFR 763 Subpart E (TEM) or NIOSH Method 7400 (PCM).

ATTACHMENT A
CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME _____ CONTRACT NO. _____
PROJECT ADDRESS _____ _____
CONTRACTOR'S NAME _____
EMPLOYEE'S NAME _____
WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAVE BEEN LINKED WITH TYPES OF LUNG DISEASE AND CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NONSMOKING PUBLIC.

Your employer's contract for the above project requires that: you be provided with and complete formal and project specific training, you be supplied with proper personal protective equipment including respirators, that you be trained in its use and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you.
Date Completed _____

FORMAL TRAINING: I have completed a formal training course for: asbestos abatement workers (for workers) (Contractor/Supervisor) that meets EPA's and this state's requirements
Date Completed _____

In addition, I have completed annual refresher as required by EPA and this state's requirements.
Date Completed _____

PROJECT SPECIFIC TRAINING: I have been provided and have completed the project specific training required by this Contract. My employer's industrial hygienist and competent person/supervisor conducted the training.
Date Completed _____

RESPIRATORY PROTECTION: I have been trained in accordance with the criteria in the Contractor's Respiratory Protection program. I have been trained in the dangers of handling and breathing asbestos dust and in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair policy of my employer.
Date Completed _____

RESPIRATOR FIT-TEST TRAINING: I have been trained in the proper selection, fit, use, care, cleaning, and maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the Contractor's Respiratory Program and have received a satisfactory fit. I have been assigned my individual respirator. I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time.
Date Completed _____

CERTIFICATE

MEDICAL EXAMINATION: I have had a medical examination within the last twelve months, which was paid for by my employer. The examination included: health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made determination regarding my physical capacity to perform work tasks on the project while wearing personal protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's industrial hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that here:

_____ were no limitations to performing the required work tasks;

_____ were identified physical limitations to performing the required work tasks.

Employees Signature _____ Date _____

Printed Name _____

Employee Number _____

Contractor's Industrial Hygienist Signature _____
Date _____

Printed Name _____

Employee Number _____

Date medical exam completed _____

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# SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Manual of Steel Construction 13th Edition, AISC. AISC 360-05 specification for structural steel buildings.

### 1.2 SUMMARY

A. Section Includes:

1. Structural steel.

### 1.3 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

B. Seismic-Load-Resisting System: Elements of structural-steel frame designated as "SLRS" or along grid lines designated as "SLRS" on Drawings, including columns, beams, and braces and their connections.

C. Heavy Sections: Rolled and built-up sections as follows:

1. Shapes included in ASTM A 6/A 6M with flanges thicker than 1-1/2 inches.
2. Welded built-up members with plates thicker than 2 inches.
3. Column base plates thicker than 2 inches.

### 1.4 SUBMITTALS

A. Submittals shall be in accordance with Division 01 Section 01 33 00, "Submittal Procedures."

B. Product Data:

1. Shop Primer.

2. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy hex or round head steel structural bolts with splined ends; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers

3. A325 H.S. bolts.

C. Shop Drawings: Submit shop drawings for review prior to commencing any fabrication of structural steel.
   1. Show framing layout, dimension, connections with adjoining materials and construction, finishes, welds, bolts and fasteners, anchoring, and all fabrication or erection accessories required.
   2. Specify field welds, cuts, holes and fasteners.
   3. Verify all dimensions and correlate with adjoining construction and materials.
   4. Indicate size, type, and grade of all members.
   5. Include with each detail shown on the shop drawings a reference to the Architect's and Engineer's drawings and details, where applicable.
   6. Prior to shop drawings submittal, the details and fabricator shall review the drawings for obvious drafting and detailing errors.
   7. Indicated welded connections on shop drawings using standard AWS welding symbols. Show all welded connections with details showing size, length, location, and type of welds.
   8. Identify members and connections of the seismic-load-resisting system.

D. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to latest AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing, including the following:

   1. Power source (constant current or constant voltage).
   2. Electrode manufacturer and trade name, for demand critical welds.
   3. Welder identification.

E. Qualification Data: For qualified Installer, Fabricator, and Testing Agency.

F. Welding certificates.

G. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

H. Mill test reports for structural steel, including chemical and physical properties. Mill reports are to be submitted for record only and will not be reviewed:
   1. If test reports are not submitted or test reports cannot be identified with material proposed for use in the work, then secure and perform structural tests on 5 percent on all such unidentified steel.
   2. Contractor shall furnish all such material for testing and pay for all such tests.
   3. Furnish client, and Structural Engineer certified copies of all test reports.

I. Product Test Reports: For the following:

   1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
   2. Tension-control, high-strength bolt-nut-washer assemblies.
   3. Shop primers.

J. Source quality-control reports.

## 1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.

B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

C. Shop-Painting Applicators: Qualified according to SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

E. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 341 and AISC 341s1.
3. AISC 360.
4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

F. Preinstallation Conference: Conduct conference at Project site.

## 1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.7 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 50 percent.

B. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than the following:

1. W-Shapes: 50 percent.
2. Channels, Angles, M, S-Shapes: 50 percent.
3. Plate and Bar: 25 percent.
4. Cold-Formed Hollow Structural Sections: 25 percent.
5. Steel Pipe: 25 percent.
6. All Other Steel Materials: 25 percent.

C. W-Shapes: ASTM A 992/A 992M, Grade 50.

D. Channels, Angles, M, S-Shapes: ASTM A 36/A 36M or ASTM A 572/A 572M, Grade 50 (345).

E. Plate and Bar: ASTM A 36/A 36M, ASTM A 572/A 572M, Grade 36.

1. Weight Class: Standard.
2. Finish: Black except where indicated to be galvanized.

F. Welding Electrodes: E 70XX comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, (ASTM A 563M, Class 8S) heavy-hex carbon-

steel nuts; and ASTM F 436 (ASTM F 436M), Type 1, hardened carbon-steel washers; all with plain finish.

B. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH (ASTM A 563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M), Type 1, hardened carbon-steel washers.

1. Finish: For exposed steel connection.

C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, round head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.

1. Finish: Plain.

## 2.3 PRIMER

A. Primer: Comply with Division 09 painting Sections.

## 2.4 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
1. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
2. Mark and match-mark materials for field assembly.
3. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 1, "Solvent Cleaning, SSPC-SP 2, "Hand Tool Cleaning, SSPC-SP 3, "Power Tool Cleaning."

F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Weld threaded nuts to framing and other specialty items indicated to receive other work.

## 2.5 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened. All bolted connections, except, slip critical at all brace connections as indicated on plan.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

## 2.6 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
3. Surfaces to be high-strength bolted with slip-critical connections.
4. Galvanized surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:

1. SSPC-SP 2, "Hand Tool Cleaning."
2. SSPC-SP 3, "Power Tool Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 2 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

D. Painting: Prepare steel and apply a one-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 2 mils.

## 2.7 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.

1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.

## 2.8 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.

1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

1. Liquid Penetrant Inspection: ASTM E 165.
2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
3. Ultrasonic Inspection: ASTM E 164.
4. Radiographic Inspection: ASTM E 94.

E. In addition to visual inspection, shop-welded shear connectors will be tested and inspected according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

1. Bend tests will be performed if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
2. Tests will be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

C. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

D. Splice members only where indicated.

E. Do not use thermal cutting during erection.

F. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

## 3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Tension-Control A 325-N or Slip Critical where indicated on Drawings.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

## 3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Bolted Connections: Bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.

1. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

   a. Liquid Penetrant Inspection: ASTM E 165.
   b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
   c. Ultrasonic Inspection: ASTM E 164.
   d. Radiographic Inspection: ASTM E 94.

D. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:

1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.

E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780.

B. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

C. Touchup Painting: Cleaning and touchup painting are specified in Division 09 painting Sections.

END OF SECTION 05 12 00

# SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes non-load-bearing steel framing members for the following applications:

1. Interior framing systems (furring at new columns, etc.).

### 1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Sustainable Design Submittal:

1. Product Data: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.

a. Include statement indicating costs for each product having recycled content.

### 1.3 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

## PART 2 - PRODUCTS

### 2.1 NON-LOAD-BEARING STEEL FRAMING, GENERAL

A. Recycled Content of Steel Products: Provide products with average recycled content of steel products such that postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

B. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.
2. Protective Coating: ASTM A 653/A 653M, G60, hot-dip galvanized, unless otherwise indicated.

2.2 STEEL FRAMING FOR FRAMED ASSEMBLIES

A. Steel Studs and Runners: ASTM C 645.

1. Minimum Base-Metal Thickness: 0.0312 inch.
2. Depth: As indicated on Drawings.

B. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch- deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

2.3 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide the following:
1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.
1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install bracing at terminations in assemblies.

C. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

## 3.3 INSTALLING FRAMED ASSEMBLIES

A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

B. Install studs so flanges within framing system point in same direction.

1. Space studs as follows:

a. Single-Layer Application: 16 inches o.c., unless otherwise indicated.

C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.

D. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

END OF SECTION 09 22 16

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# SECTION 09 29 00 - GYPSUM BOARD

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes the following:

1. Interior gypsum board.
2. Exterior gypsum board for ceilings and soffits.
3. Gypsum board patching for fire-rated and non-rated assemblies.

### 1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

### 1.3 QUALITY ASSURANCE

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

### 1.4 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

### 1.5 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. American Gypsum Co.
b. BPB America Inc.
c. G-P Gypsum.
d. Lafarge North America Inc.
e. National Gypsum Company.
f. PABCO Gypsum.
g. Temple.
h. USG Corporation.

B. Regular Type:

1. Thickness: 1/2 inch.
2. Long Edges: Tapered.

C. Type X:

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

D. Type C:

1. Thickness: As required by fire-resistance-rated assembly indicated on Drawings or to match existing gypsum board.
2. Long Edges: Tapered.

E. Flexible Type: Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.

1. Thickness: 1/4 inch.
2. Long Edges: Tapered.

F. Ceiling Type: Manufactured to have more sag resistance than regular-type gypsum board.

1. Thickness: 1/2 inch.
2. Long Edges: Tapered.

G. Foil-Backed Type:

1. Core: As indicated on Drawings.
2. Long Edges: Tapered.

H. Abuse-Resistant Type: Manufactured to produce greater resistance to surface indentation, through-penetration (impact resistance), and abrasion than standard, regular-type and Type X gypsum board.

1. Core: As indicated on Drawings.
2. Long Edges: Tapered.
3. Thickness: As indicated on Drawings.

I. Moisture- and Mold-Resistant Type: With moisture- and mold-resistant core and surfaces.

1. Core: 5/8 inch, Type X.
2. Long Edges: Tapered.

## 2.3 EXTERIOR GYPSUM BOARD FOR CEILINGS AND SOFFITS

A. Exterior Gypsum Soffit Board: ASTM C 931/C 931M or ASTM C 1396/C 1396M, with manufacturer's standard edges.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. American Gypsum Co.
b. BPB America Inc.
c. G-P Gypsum.
d. Lafarge North America Inc.
e. National Gypsum Company.
f. PABCO Gypsum.
g. Temple.
h. USG Corporation.

2. Core: As indicated.

B. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M.

1. Product: Subject to compliance with requirements, provide "Dens-Glass Gold" by G-P Gypsum.
2. Core: As indicated.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:

a. Cornerbead.
b. Bullnose bead.
c. LC-Bead: J-shaped; exposed long flange receives joint compound.
d. L-Bead: L-shaped; exposed long flange receives joint compound.
e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
f. Expansion (control) joint.
g. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Exterior Trim: ASTM C 1047.

1. Material: Hot-dip galvanized steel sheet, plastic, or rolled zinc.
2. Shapes:

a. Cornerbead.
b. LC-Bead: J-shaped; exposed long flange receives joint compound.
c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.
2. Exterior Gypsum Soffit Board: Paper.
3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.

3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.

D. Joint Compound for Exterior Applications:

1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.

2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.

## 2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

C. Acoustical Sealant: As specified in Section 09 51 13 "Acoustical Panel Ceilings."

1. Provide sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

## 3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Regular Type: As indicated on Drawings.
2. Type X: As indicated on Drawings.
3. Type C: Where required for specific fire-resistance-rated assembly indicated.
4. Flexible Type: Apply in double layer at curved assemblies.
5. Ceiling Type: Ceiling surfaces.
6. Foil-Backed Type: As indicated on Drawings.
7. Abuse-Resistant Type: As indicated on Drawings.
8. Moisture- and Mold-Resistant Type: As indicated on Drawings.

B. Where patching existing gypsum board, match type and thickness of adjacent board.

C. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.

3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

5. Where patching existing gypsum board, cut existing board back to supports on two opposite sides, making a square or rectangular opening; cut patch to fit tightly in opening.

D. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

E. Curved Surfaces:

1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch- long straight sections at ends of curves and tangent to them.
2. For double-layer construction, fasten base layer to studs with screws 16 inches o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c.

## 3.4 APPLYING EXTERIOR GYPSUM PANELS FOR CEILINGS AND SOFFITS

A. Apply panels perpendicular to supports, with end joints staggered and located over supports.

1. Install with 1/4-inch open space where panels abut other construction or structural penetrations.
2. Fasten with corrosion-resistant screws.

## 3.5 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners, unless otherwise indicated.
2. Bullnose Bead: Use where indicated.
3. LC-Bead: Use at exposed panel edges.
4. L-Bead: Use where indicated.
5. U-Bead: Use at exposed panel edges.
6. Curved-Edge Cornerbead: Use at curved openings.

D. Exterior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.

## 3.6 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, including joints around patches, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.

    a. Primer and its application to surfaces are specified in other Division 09 Sections.

E. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.

## 3.7 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

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# SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes acoustical panels and exposed suspension systems for ceilings.

### 1.2 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light Reflectance coefficient.

D. NRC: Noise Reduction Coefficient.

### 1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Match existing ceiling panels and grid.

B. Samples for Initial Selection: For components with factory-applied color finishes.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.

1. Acoustical Panel: Set of 6-inch- square Samples of each type, color, pattern, and texture.
2. Exposed Suspension System Members, Moldings, and Trim: Set of 12-inch- long Samples of each type, finish, and color.

D. Qualification Data: For testing agency.

E. Field quality-control test reports.

F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical panel ceiling.

G. Research/Evaluation Reports: For each acoustical panel ceiling and components and anchor and fastener type.

H. Maintenance Data: For finishes to include in maintenance manuals.

## 1.4 QUALITY ASSURANCE

A. Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory, with the experience and capability to conduct the testing indicated. NVLAP-accredited laboratories must document accreditation, based on a "Certificate of Accreditation" and a "Scope of Accreditation" listing the test methods specified.

B. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:

1. Surface-Burning Characteristics: Provide acoustical panels with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:

a. Smoke-Developed Index: 450 or less.

D. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand the effects of earthquake motions according to the following:

1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
2. CISCA's Guidelines for Systems Requiring Seismic Restraint: Comply with CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies--Seismic Zones 3 & 4."
3. ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."

E. Preinstallation Conference: Conduct conference at Project site.

## 1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.7 COORDINATION

A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Panels: Full-size panels equal to 2.0 percent of quantity installed.
2. Suspension System Components: Quantity of each exposed component equal to 2.0 percent of quantity installed.
3. Hold-Down Clips: Equal to 2.0 percent of quantity installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL PANELS, GENERAL

A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.

1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.

B. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by COTR from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

## 2.2 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING

A. Basis-of-Design Product: Subject to compliance with requirements, provide ceiling panels to match existing

B. Antimicrobial Treatment: Broad spectrum fungicide and bactericide based.

## 2.3 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.

1. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.

C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.

    a. Type: Postinstalled bonded anchors.
    b. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Group 1 Alloy 304 or 316 for bolts; Alloy 304 or 316 for anchor.
    c. Corrosion Protection: Components fabricated from nickel-copper-alloy rods complying with ASTM B 164 for UNS No. N04400 alloy.

D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
1. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304, nonmagnetic.
2. Nickel-Copper-Alloy Wire: ASTM B 164, nickel-copper-alloy UNS No. N04400.

3. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.135-inch- diameter wire.

E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch- thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 coating designation; with bolted connections and 5/16-inch- diameter bolts.

F. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.

G. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.

H. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in-place.

I. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches o.c. on all cross tees.

J. Impact Clips: Where indicated, provide manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.

## 2.4 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING

A. Basis-of-Design Product: Subject to compliance with requirements, provide ceiling grid to match existing.

## 2.5 METAL EDGE MOLDINGS AND TRIM

A. Basis-of-Design Product: Subject to compliance with requirements, provide moldings and trim matching suspension system

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.
2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.6 ACOUSTICAL SEALANT

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Acoustical Sealant for Exposed and Concealed Joints:

a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
b. USG Corporation; SHEETROCK Acoustical Sealant.

2. Acoustical Sealant for Concealed Joints:

a. OSI Sealants, Inc.; Pro-Series SC-175 Rubber Base Sound Sealant.
b. Pecora Corporation; BA-98.
c. Tremco, Inc.; Tremco Acoustical Sealant.

B. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

C. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), recommended for sealing interior concealed joints to reduce airborne sound transmission.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

A. General: Install acoustical panel ceilings to comply with ASTM C 636and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
8. Do not attach hangers to steel deck tabs.
9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
2. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
3. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions, unless otherwise indicated.

## 3.4 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections and prepare reports:

1. Suspended ceiling system.
2. Hangers, anchors and fasteners.

B. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.

C. Tests and Inspections: Testing and inspecting of completed installations of acoustical panel ceiling hangers and anchors and fasteners shall take place in successive stages, in areas of extent and using methods as follows. Do not proceed with installations of acoustical panel ceiling hangers for the next area until test results for previously completed installations of acoustical panel ceiling hangers show compliance with requirements.

1. Extent of Each Test Area: When installation of ceiling suspension systems on each floor has reached 20 percent completion but no panels have been installed.

   a. Within each test area, testing agency will select 1 of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf of tension; it will also select one of every 2 postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf of tension.
   b. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.

D. Remove and replace acoustical panel ceiling hangers and anchors and fasteners that do not pass tests and inspections and retest as specified above.

3.5 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

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# SECTION 09 91 00 - PAINTING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes surface preparation and field painting of exposed interior and exterior items and surfaces that are impacted by structural upgrades, or as indicated, including, but not limited to the following:

1. Horizontal and vertical wall and ceiling surfaces.
2. Metal doors and door frames.
3. Metal access doors and frames, non-stainless steel surfaces.
4. Exterior elements, including ductwork, pipes, conduits, hand-railings where indicated.
5. Interior ductwork which is exposed in occupied spaces and which is not externally insulated where indicated to be painted.
6. Exposed interior metal piping, not externally insulated, in occupied spaces where indicated. Do not paint copper or PVC pipe.
7. Concrete wall and floor surfaces.

B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, COTR will select from standard colors and finishes available.

C. When painting impacted items and surfaces, paint entire item or surface. At a minimum, paint from natural boundary to natural boundary, such as corner to corner and ceiling to floor for a wall. Prepare surface and match adjacent paint in color and gloss.

D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Prefinished items include the following factory-finished components:

a. Architectural woodwork.
b. Acoustical wall panels.
c. Metal toilet enclosures.
d. Metal lockers.
e. Elevator entrance doors and frames.
f. Elevator equipment.
g. Finished mechanical and electrical equipment.
h. Light fixtures.

2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:

   a. Foundation spaces.
   b. Furred areas.
   c. Ceiling plenums.
   d. Utility tunnels.
   e. Pipe spaces.
   f. Duct shafts.
   g. Elevator shafts.

3. Finished metal surfaces include the following:

   a. Anodized aluminum.
   b. Stainless steel.
   c. Chromium plate.
   d. Copper and copper alloys.
   e. Bronze and brass.

4. Operating parts include moving parts of operating equipment and the following:

   a. Valve and damper operators.
   b. Linkages.
   c. Sensing devices.
   d. Motor and fan shafts.

5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

## 1.2 DEFINITIONS

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
4. Pearl is a Benjamin Moore designation for a low-luster (satin) finish.

## 1.3 SUBMITTALS

A. Product Data: For each paint system indicated. Include block fillers and primers.

1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
4. MSDS for each paint product used.

B. Qualification Data: For Applicator.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Source Limitations: Obtain primers for each coating system from the same manufacturer as the finish coats.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

1.6 PROJECT CONDITIONS

A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.

B. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

## 1.7 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to FAA.

1. Quantity: Furnish FAA with extra paint materials in quantities indicated below:

a. Interior, Low-Luster Acrylic Finish: 1 gallon of each color applied.
b. Interior, Semigloss Acrylic Enamel: 1 gallon of each color applied.
c. Exterior, Direct To Metal Acrylic: 1 gallon.

# PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

## 2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Chemical Components of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions:

1. Flat Paints and Coatings: VOC content of not more than 50 g/L.
2. Non-Flat Paints and Coatings: VOC content of not more than 150 g/L.
3. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
4. Restricted Components: Paints and coatings shall not contain any of the following:

    a. Acrolein.
    b. Acrylonitrile.
    c. Antimony.
    d. Benzene.
    e. Butyl benzyl phthalate.
    f. Cadmium.
    g. Di (2-ethylhexyl) phthalate.
    h. Di-n-butyl phthalate.
    i. Di-n-octyl phthalate.
    j. 1,2-dichlorobenzene.
    k. Diethyl phthalate.
    l. Dimethyl phthalate.
    m. Ethylbenzene.
    n. Formaldehyde.
    o. Hexavalent chromium.
    p. Isophorone.
    q. Lead.
    r. Mercury.
    s. Methyl ethyl ketone.
    t. Methyl isobutyl ketone.
    u. Methylene chloride.
    v. Naphthalene.
    w. Toluene (methylbenzene).
    x. 1,1,1-trichloroethane.
    y. Vinyl chloride.

D. Provide "Zero VOC", odorless, latex-based primers and paints as manufactured by Pittsburgh Paints (PPG) or other manufacturer's product that has been approved with "Green Seal Class A Certification" from the LEED Certification Program.

1. Known Available Product: Pure Performance™ PPG Paint, Pittsburgh, PA.

E. Colors: Provide color selections as specified in Material and Finish Schedule. If not on Material and Finish Schedule, provide colors and glosses to match adjacent surfaces.

2.3 INTERIOR PRIMERS

A. Interior Concrete and Masonry Primer: Factory-formulated alkali-resistant acrylic-latex interior primer for interior application.

1. Benjamin Moore; Regal FirstCoat Interior Latex Primer & Underbody No. 216: Applied at a dry film thickness of not less than 1.0 mil.
2. Pittsburgh Paints; 6-2 SpeedHide Interior Quick-Drying Latex Sealer: Applied at a dry film thickness of not less than 1.0 mil.
3. Sherwin-Williams; PrepRite Masonry Primer B28W300: Applied at a dry film thickness of not less than 3.0 mils.

B. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.

1. Benjamin Moore; Regal FirstCoat Interior Latex Primer & Underbody No. 216: Applied at a dry film thickness of not less than 1.0 mil.
2. Pittsburgh Paints; 6-2 SpeedHide Interior Quick-Drying Latex Sealer: Applied at a dry film thickness of not less than 1.0 mil.
3. Sherwin-Williams; PrepRite 200 Latex Wall Primer B28W200 Series: Applied at a dry film thickness of not less than 1.6 mils.

C. Interior Ferrous-Metal Primer: Factory-formulated quick-drying rust-inhibitive alkyd-based metal primer.

1. Benjamin Moore; IronClad Alkyd Low Lustre Medal and Wood Enamel No. 163: Applied at a dry film thickness of not less than 1.3 mils.
2. Pittsburgh Paints; 7-858 Pittsburgh Paints Industrial Rust Inhibitive Steel Primer: Applied at a dry film thickness of not less than 1.5 mils.
3. Sherwin-Williams; Kem Kromik Universal Metal Primer B50NZ6/B50WZ1: Applied at a dry film thickness of not less than 3.0 mils.

D. Interior Zinc-Coated Metal Primer: Factory-formulated galvanized metal primer.

1. Benjamin Moore; IronClad Latex Low Lustre Metal and Wood Enamel No. 363: Applied at a dry film thickness of not less than 1.6 mils.
2. Pittsburgh Paints; 90-709 Pitt-Tech One Pack Interior/Exterior Primer/Finish DTM Industrial Enamel: Applied at a dry film thickness of not less than 3.0 mils.
3. Sherwin-Williams; Galvite Paint B50W3: Applied at a dry film thickness of not less than 2.0 mils.

2.4 INTERIOR FINISH COATS

A. Interior Flat Acrylic Paint: Factory-formulated flat acrylic-emulsion latex paint for interior application.

1. Benjamin Moore; Regal Wall Satin No. 215 Premium Interior Finishes Flat Finish: Applied at a dry film thickness of not less than 1.3 mils.
2. Pittsburgh Paints; 80-Line Wallhide Interior Wall Flat Latex Paint: Applied at a dry film thickness of not less than 1.2 mils.

3. Sherwin-Williams; SuperPaint Interior Latex Flat Wall Paint, A86 Series: Applied at a dry film thickness of not less than 1.5 mils.

B. Interior Latex Enamel: Factory-formulated, proprietary latex enamel interior paint.

1. Benjamin Moore; Aqua Pearl No. 310. Applied at a dry film thickness of not less than 1.3 mils.

C. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel.

1. Benjamin Moore; Moore's Regal AquaVelvet No. 319: Applied at a dry film thickness of not less than 1.4 mils.
2. Pittsburgh Paints; 89-Line Manor Hall Interior Eggshell Wall and Trim: Applied at a dry film thickness of not less than 1.4 mils.
3. Sherwin-Williams; SuperPaint Interior Latex Satin Wall Paint A87 Series: Applied at a dry film thickness of not less than 1.6 mils.

D. Interior Semigloss Acrylic Enamel: Factory-formulated semigloss acrylic-latex enamel for interior application.

1. Benjamin Moore; Regal AquaGlo No. 333 Premium Interior Finishes Latex Semi-Gloss: Applied at a dry film thickness of not less than 1.3 mils.
2. Pittsburgh Paints; 88-110 Satinhide Interior Enamel Wall & Trim Lo-Lustre Semi-Gloss Latex: Applied at a dry film thickness of not less than 1.1 mils.

3. Sherwin-Williams; SuperPaint Interior Latex Semi-Gloss Enamel A88 Series: Applied at a dry film thickness of not less than 1.6 mils.

## 2.5 FLOOR COATINGS

A. Sealer, Water Based, for Concrete Floors.
1. Duron; H&C Concrete Sealer Wet Look Water Based with H&C SharkGrip Slip Resistant Additive: Applied at recommended coverage.
2. Enviroseal Corporation; Enviroseal Duraseal Zero sealer: Applied at recommended coverage.
3. Rainguard International; Satin-Lok Wet Look Sealer: Applied at recommended coverage.

B. Floor Paint, Latex, Low Gloss (Maximum Gloss Level 3).
1. Benjamin Moore; Moore's Latex Floor & Patio Enamel. Applied at recommended coverage.
2. Pratt & Lambert; WithSTAND Latex Floor Enamel. Applied at recommended coverage.
3. Sherwin-Williams; Industrial & Marine ArmorSeal Tread Plex WB Floor Coating. Applied at recommended coverage.

2.6 EXTERIOR COATINGS

A. Exterior alkali resistant water based primer.
   1. Benjamin Moore; SuperHide Latex Primer/Undercoater 284.
   2. Benjamin Moore; Fresh Start All Purpose 100% Acrylic Primer 023.
   3. Pratt & Lambert; Pro-Hide Gold Interior/Exterior Acrylic Concrete and Stucco Primer Z6300.

B. Direct to Metal (DTM) Acrylic coating; semi-gloss or gloss as approved by COTR.

   1. Benjamin Moore; Industrial Maintenance Coatings M29 DTM: Applied at a dry film thickness of not less than 1.5 mils.
   2. Pittsburgh Paints; Pitt-Tech DTM Industrial Enamels 90 Series: Applied at a dry film thickness of not less than 1.5 mils.
   3. Sherwin-Williams; DTM Acrylic Coating, B66-100 or B66-200 Series: Applied at a dry film thickness of not less than 2.5 mils.

C. Acrylic coating for concrete and stucco, flat.
   1. Benjamin Moore; Moorcraft SuperSpec 183-01: Applied at a dry film thickness of not less than 1.3 mil.
   2. Benjamin Moore; MoorLife N105-01: Applied at a dry film thickness of not less than 1.3 mil.
   3. Pratt & Lambert Pro-Hide Gold Z8400: Applied at a dry film thickness of not less than 1.2 mil.

D. Water-based sealer for exterior concrete slabs.
   1. Duron; H&C Concrete Sealer Wet Look Water Based with H&C SharkGrip Slip Resistant Additive: Applied at recommended coverage.
   2. Enviroseal Corporation; Enviroseal Duraseal Zero sealer: Applied at recommended coverage.
   3. Rainguard International; Satin-Lok Wet Look Sealer: Applied at recommended coverage.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application.

   1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
   2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
   3. Do not disturb surfaces known or suspected to contain lead-based paint.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify COTR about anticipated problems when using the materials specified over substrates primed by others.

## 3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Complete finish repairs at impacted areas as specified in other Division 09 sections. Sand or otherwise finish smooth and ready to receive paint. Match texture of adjoining surfaces.

C. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime.
2. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

    a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
    b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.

3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.

    a. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
    b. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.

4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods. Lightly etch surface if necessary to promote adhesion of paints.

E. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

F. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

## 3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.
4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.

B. Scheduling Painting: Coordinate with COTR application of paint. Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Omit primer over metal surfaces that have been shop primed and touchup painted.
3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required. Use of spray equipment in Control Wing Basement may be restricted or prohibited. Coordinate with COTR.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

E. Mechanical Work: Painting mechanical work is limited to items exposed in occupied spaces. Mechanical items to be painted include the following:

1. Metal piping where indicated. Do not paint copper and PVC.
2. Ductwork, non-insulated externally where indicated.
3. Primed equipment supports where indicated.
4. Accessory items where indicated

F. Telecommunication items to be painted include, but are not limited to the following:

1. Metal racks, which are not pre-finished and are exposed in occupied space, where indicated.

G. Fire Alarm and Sprinkler Systems: Refer to Division 13 sections for requirements.

H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

I. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

K. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

## 3.4 FIELD QUALITY CONTROL

A. The FAA reserves the right to invoke the following test procedure at any time and as often as the FAA deems necessary during the period when paint is being applied:

1. The FAA will engage the services of an independent testing agency to sample the paint material being used. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.
2. The testing agency will perform appropriate tests for the following characteristics as required by the FAA:

    a. Quantitative materials analysis.
    b. Abrasion resistance.
    c. Apparent reflectivity.
    d. Flexibility.
    e. Washability.
    f. Absorption.
    g. Accelerated weathering.
    h. Dry opacity.
    i. Accelerated yellowness.
    j. Recoating.
    k. Skinning.
    l. Color retention.
    m. Alkali and mildew resistance.

3. If test results show material being used does not comply with specified requirements, the Contractor may be directed to stop painting, remove non-complying paint, pay for testing, repaint surfaces coated with rejected paint, and remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the two coatings are incompatible.

## 3.5 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

## 3.6 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by COTR.

B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

## 3.7 INTERIOR PAINT SCHEDULE

A. Concrete and Masonry (Other Than Concrete Unit Masonry): Provide the following paint systems over interior concrete and brick masonry substrates:

1. Low-Luster Acrylic-Enamel Finish: Two finish coats over a primer.

a. Primer: Interior concrete and masonry primer.
b. Finish Coats: Interior low-luster acrylic enamel.

B. Concrete Unit Masonry: Provide the following finish systems over interior concrete masonry:

1. Low-Luster Acrylic-Enamel Finish: Two finish coats over a block filler.

a. Block Filler: Concrete unit masonry block filler.
b. Finish Coats: Interior low-luster acrylic enamel.

C. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

1. Flat Acrylic Finish: Two finish coats over a primer.

a. Primer: Interior gypsum board primer.
b. Finish Coats: Interior flat acrylic paint.

2. Low-Luster Acrylic-Enamel Finish: Two finish coats over a primer.

a. Primer: Interior gypsum board primer.
b. Finish Coats: Interior low-luster acrylic enamel.

D. Plaster: Provide the following finish systems over new interior plaster surfaces:

1. Flat Acrylic Finish: Two finish coats over a primer.

   a. Primer: Interior plaster primer.
   b. Finish Coats: Interior flat acrylic paint.

2. Low-Luster Acrylic-Enamel Finish: Two finish coats over a primer.

   a. Primer: Interior plaster primer.
   b. Finish Coats: Interior low-luster acrylic enamel.

E. Wood and MBO: Provide the following paint finish systems over new interior wood surfaces:

1. Semigloss Acrylic-Enamel Finish: Two finish coats over a wood undercoater.

   a. Primer: Interior wood primer for acrylic-enamel and semigloss alkyd-enamel finishes.
   b. Finish Coats: Interior semigloss acrylic enamel.

F. Ferrous Metal: Provide the following finish systems over ferrous metal:

1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer.

   a. Primer: Interior ferrous-metal primer.
   b. Finish Coats: Interior semigloss acrylic enamel.

G. Zinc-Coated Metal: Provide the following finish systems over interior zinc-coated metal surfaces:

1. Flat Acrylic Finish: Two finish coats over a primer.

   a. Primer: Interior zinc-coated metal primer.
   b. Finish Coats: Interior flat acrylic paint.

H. All-Service Jacket over Insulation: Provide the following finish system on cotton or canvas insulation covering:

1. Flat Acrylic Finish: Two finish coats. Add fungicidal agent to render fabric mildew proof.
   a. Finish Coats: Interior flat latex-emulsion size.

I. Concrete Substrates, Traffic Surfaces:

1. Latex Floor Enamel System:

   a. Prime Coat: Floor paint, latex, low gloss (maximum Gloss Level 3).
   b. Intermediate Coat: Floor paint, latex, low gloss (maximum Gloss Level 3).
   c. Topcoat: Floor paint, latex, low gloss (maximum Gloss Level 3).

3.8 EXTERIOR PAINT SCHEDULE

A. Galvanized-Metal Substrates:

1. Semi-Gloss or Gloss Acrylic Finish. Provide two coats.

a. Primer: Direct to Metal product is self-priming.
b. Finish: Direct to Metal gloss or semi-gloss.

B. Concrete Substrates, Nontraffic Surfaces:

1. Latex System:
a. Prime Coat: Primer, alkali resistant, water based, MPI # 3.
b. Intermediate Coat: Latex, exterior, matching topcoat.
c. Topcoat: Latex, exterior flat (Gloss Level 1), MPI # 10.

C. Concrete Substrates, Traffic Surfaces:
1. Acrylic Sealer:
a. Prime Coat: Water-based, if required, MPI # 99.
b. Intermediate Coat: Sealer applied at manufacturer's recommended rate.
c. Topcoat: Sealer, matching intermediate coat, (Gloss Level 3 or higher), MPI # 99

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# SECTION 09 96 53 - ELASTOMERIC COATINGS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section includes surface preparation and application of elastomeric coatings to the following exterior substrates:

1. Steel plate, panels, and fasteners. Coat all areas where structural reinforcing has been added to create a waterproof surface.

### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each type of elastomeric coating indicated and in each color and gloss.

1. Submit Samples on same type of substrate as that to receive application, 8 inches square.
2. Step coats on Samples to show each separate coat, including primers and block fillers as applicable.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: For each product indicated, including the following:

1. Cross-reference to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Manufacturer's recommended spreading rate for each separate coat, including primers for each type of substrate as applicable.

### 1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that are from same production run (batch mix) as materials applied and that are packaged for storage in unopened, factory-sealed containers and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent but not less than 1 gal. of each material, color, and texture applied.

1.4 QUALITY ASSURANCE

A. MPI Standards: Comply with MPI standards indicated and provide elastomeric coatings listed in the "MPI Approved Products List."

1. Preparation and Workmanship: Comply with requirements in the "MPI Architectural Painting Specification Manual" for products and coating systems indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 90 deg F unless otherwise permitted by manufacturer's written instructions.

B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before starting or continuing coating operation.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace elastomeric coatings that fail within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Water penetration through the coating.
b. Deterioration of coating beyond normal weathering.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Material Compatibility:

1. Provide elastomeric finish coatings, crack fillers, and primers as applicable for use within elastomeric finish coatings that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each material or coat, provide products and spreading rates recommended in writing by elastomeric coating manufacturer for use on substrate indicated.

2.2 ELASTOMERIC FINISH COATINGS

A. Exterior Flat Waterborne, Pigmented Elastomeric Coating.

1. Products: Subject to compliance with requirements, provide one of the following that is approved for application to steel and galvanized steel and will provide a waterproof coating:

a. Cloverdale Paint; Towerthon Plus Elastomeric Coating.
b. Columbia Paint & Coatings; Hi Performance Elastech 100% Acry. Elastomeric Coating.
c. Coronado Paint Company; Elast-O-Meric Acrylic Membrane - 20 mil.
d. Diamond Vogel Paints; Permaflex Elastomeric Latex Coating.
e. Euclid Chemical Company; Super Wall-Pro elastomeric wall coating (basis of design).
f. ICI Paints; Decra-Flex Elastomeric Coating.
g. Kelly-Moore Paints; Kel-Seal Terpolymer 100% Acrylic Elastomeric.
h. Kwal Paint; Kwal Accu-Pro Elasto Wall.
i. Miller Paint Co.; Milastic Elastomeric Coating.
j. Mills Paint; Weather Flex Elastomeric Coating.
k. Modco Technology Ltd.; Elastocoat Acrylic Elastomeric Paint.
l. Parker Paint Mfg. Co. Inc., a subsidiary of PPI; EMC Elastomeric Coating.
m. PPG Industries; Pitt-Flex Elastomeric Coating.
n. Pratt & Lambert; Pro-Hide Gold Ext. Elastomeric Coating.
o. Rodda Paint Co.; Super Roflex Acrylic Elastomeric Coating.
p. Sherwin-Williams Company (The); Sherlastic Elastomeric Coating.
q. Spectra-Tone Paint Corporation; Elasto-Coat High Build Waterproofing Coating.
r. Teifs; Professional Coatings, TeifsLastic.
s. Vista Paint; Solotex.
t. BASF Building Systems; Sonneborn Colorflex.
u. Fox Industries, Inc.; FX-501 Elastomeric Coating.
v. L & L Coatings Corporation; 300 Mastic (Brush, Roller, and Airless Spray Grade).
w. M.A.B. Paints; Acra-Lastic Series.
x. Neogard, a division of Jones-Blair Company; Neoflex.
y. Pacific Polymers International, Inc.; Elasto-Tex Wallcoating H.S..

z. Sto Corp.; Stolastic.

2. Surface Profile: Smooth or Fine texture.
3. VOC Content: 100 g/L or less.

2.3 OTHER MATERIALS

A. Primer: Elastomeric coating manufacturer's recommended, factory-formulated, primer compatible with substrate and other materials indicated.

1. VOC Content: 100 g/L or less.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with manufacturer's requirements for conditions affecting performance of work.

B. Verify suitability of substrates including surface conditions and compatibility with existing finishes and primers.

C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 PREPARATION

A. Comply with manufacturer's written instructions applicable to substrates and coating systems indicated.

B. Remove hardware and hardware accessories, plates, machined surfaces, light fixtures, and similar items already installed that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.

1. After completing coating operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of coatings, including dirt, oil, grease, and incompatible paints and encapsulants. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce coating systems indicated.
2. Perform cleaning and coating application so dust and other contaminants from cleaning process will not fall on wet, newly coated surfaces.

## 3.3 APPLICATION

A. Apply elastomeric coatings according to manufacturer's written instructions.

1. Use equipment and techniques best suited for substrate and type of material being applied.
2. Apply each coat separately according to manufacturer's written instructions.

B. Primers: Apply at a rate to ensure complete coverage.

C. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats similar to color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

D. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform finish, color, and appearance.

E. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

F. Apply coatings to prepared surfaces as soon as practicable after preparation and before subsequent surface soiling or deterioration.

G. Spray Application: Use spray equipment for application only when permitted by authorities having jurisdiction. Wherever spray application is used, do not double back with spray equipment to build up film thickness of two coats in one pass.

## 3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities, touch up and restore damaged or defaced coated surfaces.

3.5 COATING SCHEDULE

A. Steel and Galvanized Steel Substrates:

1. Primer: Primer required or recommended by manufacturer.
2. Elastomeric Finish Coat(s): Manufacturer's recommended number of coats and total dry film thickness for condition of substrate; minimum one coat with 22 mils dry thickness.
3. Finish-Coat Color: As selected by COTR from manufacturer's full range.

END OF SECTION 09 96 53